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CANADIAN AVIATION REGULATIONS

**PART V
AIRWORTHINESS**

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

SUBPART 0 - GENERAL

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
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PART V - AIRWORTHINESS

SUBPART 0 - GENERAL

(amended 1998/12/01)

Interpretation

500.01 In this Part, "rotorcraft" means a gyroplane or a helicopter.
(amended 2009/12/01)



PART V - AIRWORTHINESS

SUBPART 7 - FLIGHT AUTHORITY AND CERTIFICATE OF NOISE COMPLIANCE

(amended 2000/12/01)

Application

507.01 This Subpart applies in respect of aircraft, other than ultra-light aeroplanes and hang gliders, that are

- (a) Canadian aircraft; or
- (b) operated in Canadian airspace.

Certificate of Airworthiness

507.02 Where an application for a flight authority is made pursuant to Section 507.06, the Minister shall issue a certificate of airworthiness in respect of an aircraft

(a) for which an aircraft type design has been certified by the Minister and the certification is not in respect of a restricted category aircraft;
(amended 2009/12/01)

- (b) that conforms to its certified type design; and
- (c) that is safe for flight.

Special Certificate of Airworthiness

507.03 Where an application for a flight authority is made pursuant to Section 507.06, the Minister shall issue a special certificate of airworthiness in respect of an aircraft that

- (a) meets the criteria for one of the classifications of a special certificate of airworthiness specified in Chapter 507 of the *Airworthiness Manual*;
- (b) conforms to the applicable type design or, in the case of an amateur-built aircraft, is designed and constructed in a way that ensures its airworthiness, in conformity with the requirements of Chapter 549 of the *Airworthiness Manual*; and
- (c) is safe for flight.

Flight Permit

507.04 Where an application for a flight authority is made pursuant to Section 507.06, the Minister shall issue a flight permit in respect of an aircraft that meets the criteria for one of the classifications of a flight permit specified in Chapter 507 of the *Airworthiness Manual* and that is safe for flight.

Validation of Foreign Flight Authority

507.05 Where an aircraft is operating under a foreign flight authority that is issued in respect of the aircraft or the fleet of which it is a part and that does not conform to Article 31 of the Convention, and the Minister determines that the aircraft is safe for flight, the Minister

shall validate the foreign flight authority, thereby authorizing the operation of the aircraft in Canadian airspace.

Application for Flight Authority

507.06 (1) An application for a flight authority shall be signed by the owner of the aircraft in respect of which it is submitted, or by a representative of the owner as defined in Chapter 507 of the *Airworthiness Manual*.

(2) A person who applies for a flight authority shall do so in the form and manner specified in Chapter 507 of the *Airworthiness Manual*.

(3) An applicant for a flight authority shall include with the application a declaration, made by a person authorized to do so pursuant to Section 507.10, attesting that

(a) in the case of an application for a certificate of airworthiness, the aircraft meets the requirements of Section 507.02;

(b) in the case of an application for a special certificate of airworthiness, the aircraft meets the requirements of Section 507.03; or

(c) in the case of an application for a flight permit, the aircraft meets the requirements of Section 507.04.

(4) In the case of an application to validate a foreign flight authority, the applicant shall submit a copy of the foreign flight authority, including any operational limitation imposed in respect of that flight authority.

(5) The Minister may inspect, or may cause to be inspected, any aircraft for which an application for flight authority has been made, for the purposes of determining conformity with its type design and compliance with the applicable requirements of these Regulations.

Flight Authority for an Imported Aircraft

507.07 Where an application for a flight authority is made in respect of an aircraft being imported, the applicant must comply with the importation requirements specified in Chapter 507 of the *Airworthiness Manual*.

Issuance of Additional Flight Authority

507.08 (1) When the owner of an aircraft requests an additional flight authority in accordance with section 507.06 and demonstrates compliance with the applicable standards contained in Standard 507 - *Flight Authority and Certificate of Noise Compliance* and if the aircraft is safe for flight, the Minister shall issue
(amended 2003/06/01)

(a) in the case of an aircraft that has been damaged or has inoperative systems such that it no longer conforms to the conditions of the flight authority, an additional flight authority to allow the aircraft to be flown to a location where the required maintenance can be performed; or

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

SUBPART 9 - EXPORT AIRWORTHINESS CERTIFICATES

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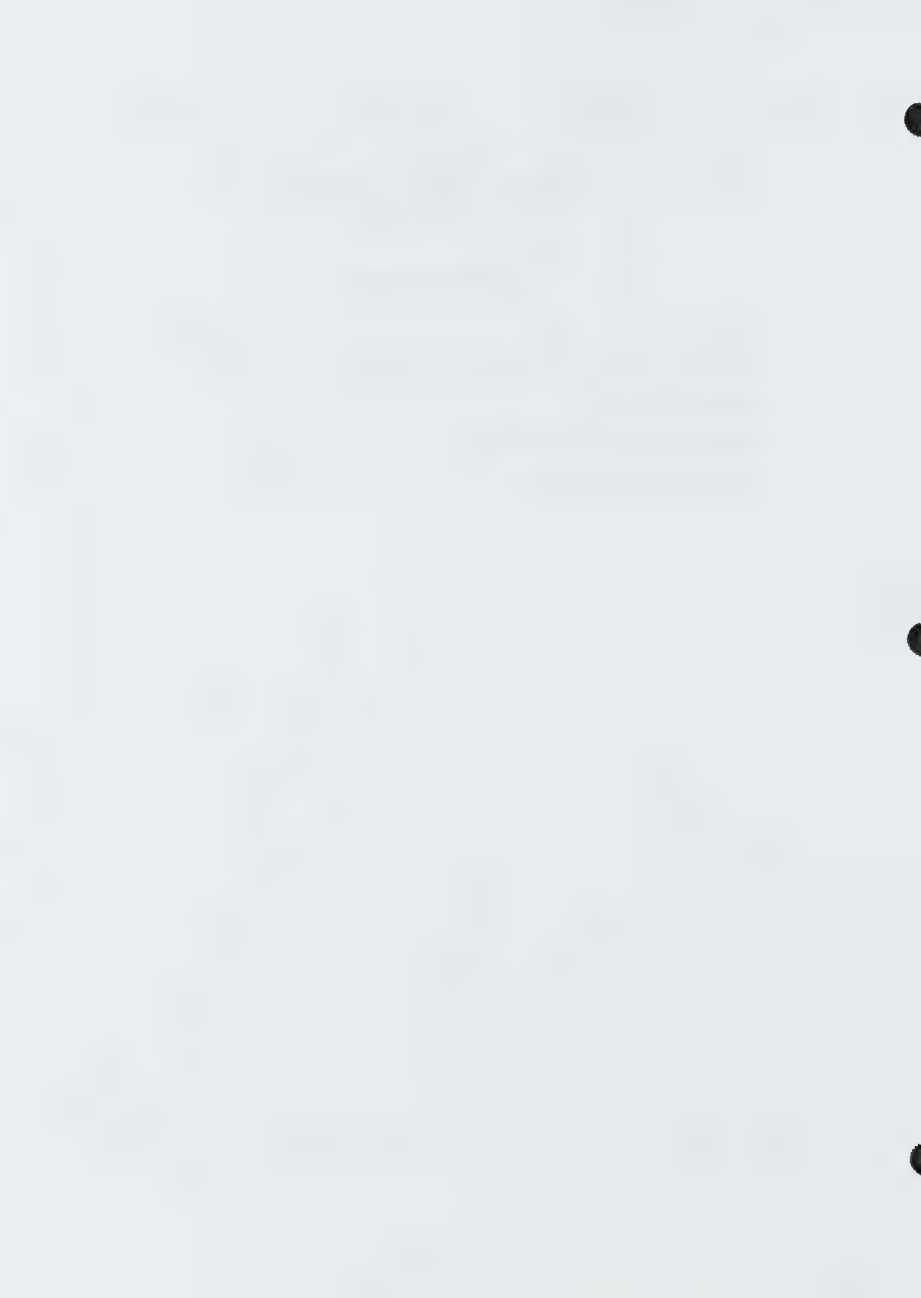
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**CAR 509 -
EXPORT AIRWORTHINESS
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PART V - AIRWORTHINESS

SUBPART 9 - EXPORT AIRWORTHINESS CERTIFICATES

Application

509.01 This Subpart applies in respect of the following aircraft if they meet the export requirements specified in Chapter 509 of the *Airworthiness Manual*, except for aircraft that are operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, ultra-light aeroplanes and hang gliders:
(amended 2002/03/01)

- (a) new aircraft manufactured in Canada;
- (b) Canadian aircraft in respect of which a Certificate of Airworthiness has been issued pursuant to Subpart 7; or
- (c) aircraft that were last registered in Canada but are no longer registered in any state.

Application for an Export Airworthiness Certificate

509.02 (1) A person who applies for an Export Airworthiness Certificate shall do so in the form and manner specified in Chapter 509 of the *Airworthiness Manual*.

(2) An applicant for an Export Airworthiness Certificate shall include with the application a declaration made by a person authorized to do so pursuant to Section 509.04, attesting that the aircraft conforms to the certified type design specified in the application.

Authority for Export

509.03 (1) Subject to subsection (2), the Minister shall issue an Export Airworthiness Certificate where the aircraft in respect of which the application is made conforms to

(a) the type design specified in a type certificate; or
(amended 2009/12/01)

(b) another type design specified in the application, where the aircraft is being exported to a state with which Canada has entered into an agreement that provides for the acceptance of Export Airworthiness Certificates and the aircraft conforms to any special requirements specified by that state.

(2) Where an aircraft does not meet the requirements of subsection (1), the Minister may issue an Export Airworthiness Certificate that specifies the non-conformity to the applicable type design or any special requirement and the acceptance of that non-conformity by the state to which the aircraft is being exported.

***Persons Who May Attest to Condition and
Conformity***

509.04 No person shall make a declaration of an aircraft's condition or conformity to its certified type design for the purpose of obtaining an Export Airworthiness Certificate in respect of the aircraft, other than

(a) the holder of an aircraft maintenance engineer (AME) licence issued pursuant to Part IV that is applicable to that aircraft type; or

(b) in the case of a new aircraft manufactured in Canada, an authorized representative of the manufacturer.

Responsibilities of the Exporter

509.05 Where an Export Airworthiness Certificate has been issued in respect of an aircraft, the owner of the aircraft shall, on transfer of its title,

(a) forward to the new owner all of the documents and information required by Chapter 509 of the *Airworthiness Manual*;

(b) where the exported aircraft is disassembled, forward to the new owner the manufacturer's assembly instructions and the other documents relating to the aircraft specified in Chapter 509 of the *Airworthiness Manual*; and

(c) ensure that the temporary equipment, if any, incorporated into the aircraft for the purpose of the export delivery flight is removed and the aircraft is restored to the configuration approved in the type certificate.



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PART V - AIRWORTHINESS

***SUBPART 11 - APPROVAL OF THE TYPE DESIGN OF AN
AERONAUTICAL PRODUCT
- REPLACED BY CAR 521
(2009/12/01)***

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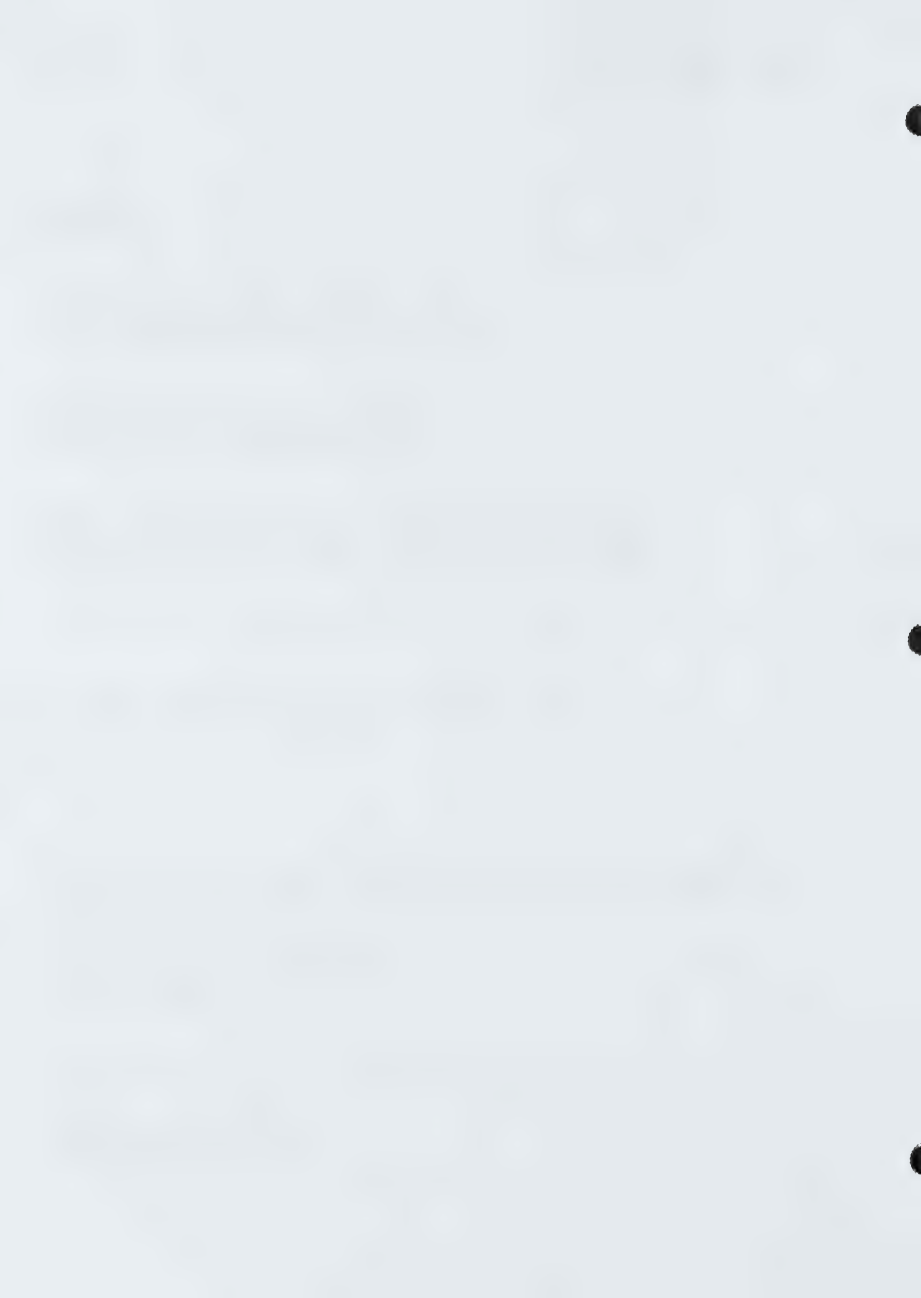
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PART V - AIRWORTHINESS

***SUBPART 13 - APPROVAL OF MODIFICATION AND
REPAIR DESIGNS
- REPLACED BY CAR 521
(2009/12/01)***

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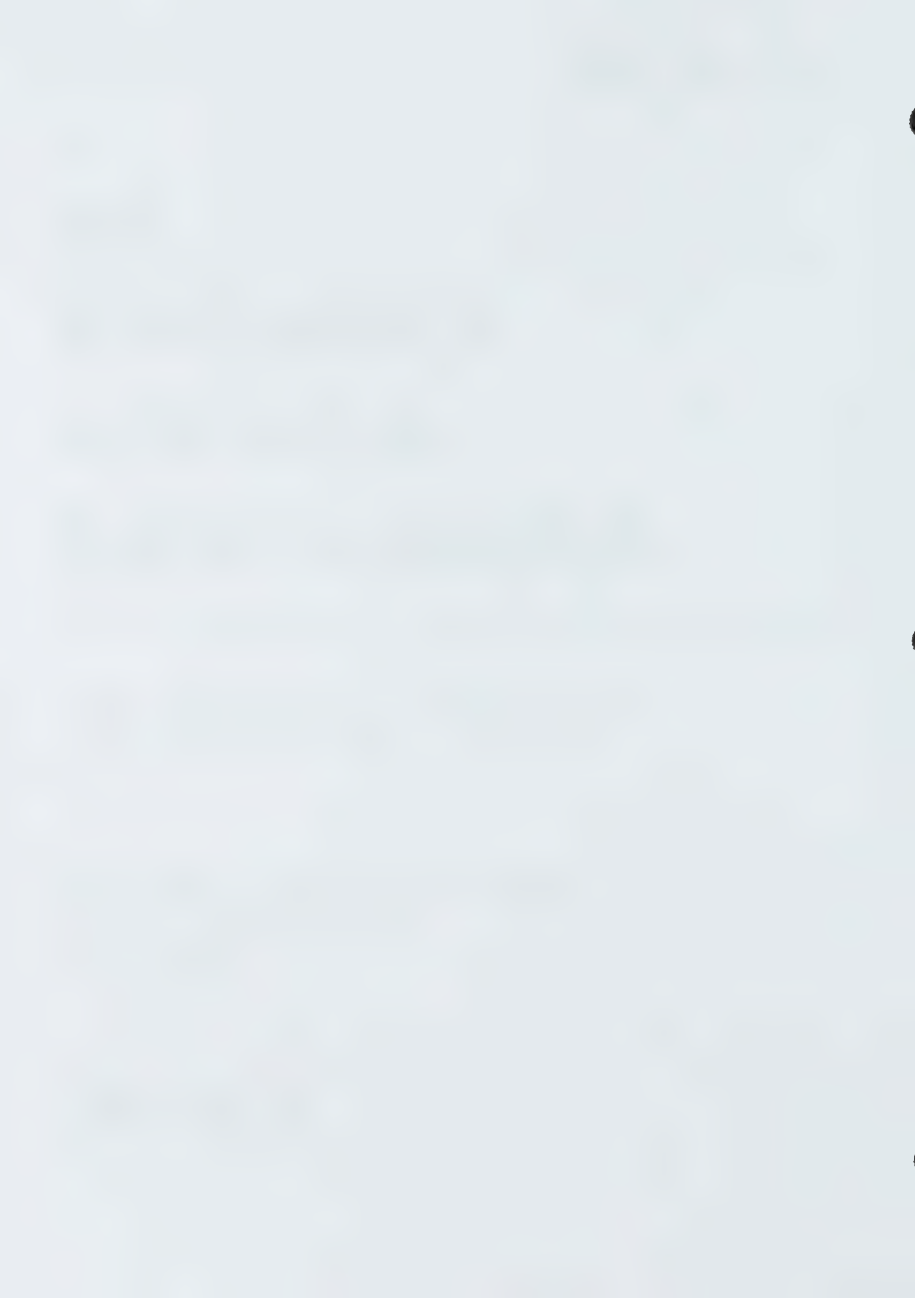
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PART V - AIRWORTHINESS

***SUBPART 16 - AIRCRAFT EMISSIONS
- REPLACED BY CAR 521
(2009/12/01)***

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PART V - AIRWORTHINESS

SUBPART 21 - APPROVAL OF THE TYPE DESIGN OR A CHANGE TO THE TYPE DESIGN OF AN AERONAUTICAL PRODUCT



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
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CAR 521 - APPROVAL OF THE TYPE DESIGN OR A CHANGE TO THE TYPE DESIGN OF AN AERONAUTICAL PRODUCT

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PART V - AIRWORTHINESS

SUBPART 21 - APPROVAL OF THE TYPE DESIGN OR A CHANGE TO THE TYPE DESIGN OF AN AERONAUTICAL PRODUCT

(amended 2009/12/01)

DIVISION I - GENERAL

Interpretation

521.01 The following definitions apply in this Subpart.

“aeronautical product” means an aircraft, aircraft engine, aircraft propeller or aircraft appliance or part, or a component part of any of those things. (*produit aéronautique*)

“applicant” means an individual or organization responsible for the design of an aeronautical product, or a representative of such an individual or organization, that makes an application for the issuance of or a change to a design approval document in respect of an aeronautical product. (*demandeur*)

“design approval document” means a type certificate, a supplemental type certificate, a repair design approval, a part design approval or a Canadian Technical Standard Order (CAN-TSO) design approval. (*document d'approbation de la conception*)

“foreign aeronautical product” means an aeronautical product for which the state of design is a state other than Canada. (*produit aéronautique étranger*)

“VLA” or “very light aeroplane” means an aeroplane that has a single engine with a spark or compression ignition, has no more than two seats and is designed and manufactured to have

(a) a maximum certificated take-off weight not exceeding 750 kg; and

(b) a stall speed in the landing configuration (V_{SO}) of 45 knots (52 mph) calibrated air speed (CAS), or less. (*VLA ou avion très léger*)

Application

521.02 This Subpart applies to applicants for and holders of the following documents and applicants for a change to one of those documents:

(a) a type certificate issued under section 521.57 in respect of an aeronautical product;

(b) a Canadian Technical Standard Order (CAN-TSO) design approval issued under section 521.109 in respect of an appliance or a part;

(c) a supplemental type certificate issued under section 521.206 in respect of an aeronautical product;

(d) a repair design approval issued under section 521.256 in respect of an aeronautical product; and

(e) a part design approval issued under section 521.306 in respect of a replacement part for an aeronautical product.

Appliances and Parts

521.03 An appliance or a part, other than a standard part, may be approved by the issuance of any one of the following:

(a) a Canadian Technical Standard Order (CAN-TSO) design approval;

(b) a type certificate, in the case of an appliance or part that is part of an aeronautical product on which it is installed;

(c) a supplemental type certificate, in the case of an appliance or part that is part of a change to the type design of an aeronautical product; or

(d) a part design approval, in the case of a part that is a replacement part.

521.04 to 521.24 Reserved

DIVISION II - TYPE CERTIFICATES

Application

521.25 This Division applies

(a) in respect of the issuance of a type certificate for an aeronautical product; and

(b) to applicants for and holders of a type certificate in respect of an aeronautical product.

Eligibility Requirements

521.26 An applicant for a type certificate in respect of an aeronautical product shall have, or have access to, the technical capability to conduct the design analyses and tests required to demonstrate the conformity of the aeronautical product with its certification basis.

Aircraft Categories

521.27 (1) An applicant may, in the case of an aircraft, request a type certificate in respect of the following aircraft categories or any combination of them:

(a) normal category;

(b) utility category;

(c) aerobatic category;

(d) commuter category;

(e) transport category; or

(f) restricted category.

(2) An applicant may, in the case of an aircraft for which no standards of airworthiness are listed in subsection 521.31(1), request a type certificate in respect of an aircraft category that is not listed in subsection (1).

Application for a Type Certificate

521.28 An applicant for a type certificate in respect of an aeronautical product shall submit to the Minister

- (a) an application that contains the information specified on the form published by the Minister entitled Type Certificate Application;
- (b) a description of the aeronautical product that contains, in addition to its principal design features and its specifications,
 - (i) in the case of an aircraft, a three-view drawing, the preliminary data respecting the design and performance, and the proposed operating characteristics and limitations, and
 - (ii) in the case of an aircraft engine or propeller, a general arrangement drawing, and the proposed operating characteristics and limitations;
- (c) a proposed certification basis; and
- (d) a certification plan that identifies
 - (i) the means to be used to demonstrate that the aeronautical product conforms to the applicable certification basis,
 - (ii) the documentation that demonstrates the conformity of the aeronautical product with the applicable certification basis,
 - (iii) the resources necessary for carrying out the demonstration of conformity referred to in subparagraph (i), and
 - (iv) the schedule for carrying out the demonstration of conformity referred to in subparagraph (i).

Effective Period of an Application

521.29 (1) Unless an applicant demonstrates, at the time of submitting an application for a type certificate in respect of an aeronautical product, that a longer period is required for the design, development and testing of the product, and for that reason the Minister approves a longer period, the application is effective during one of the following periods, beginning on the date of the application:

- (a) five years, in the case of a transport category aeroplane or a transport category rotorcraft; or
- (b) three years, in the case of
 - (i) an aircraft other than an aircraft referred to in paragraph (a),
 - (ii) an aircraft engine, or

(iii) an aircraft propeller.

(2) If a type certificate is not issued within the applicable effective period referred to in subsection (1), the applicant may

(a) submit a new application for a type certificate; or

(b) apply for an extension of the effective period of the original application.

(3) If the effective period of an application for a type certificate is extended under paragraph (2)(b), the standards of airworthiness applicable to the aeronautical product are those in force on the date that precedes, by one of the periods referred to in subsection (1), the date of the issuance of the type certificate.

Certification Basis

521.30 (1) The Minister shall establish, in respect of an aeronautical product, a certification basis consisting of

(a) subject to subsections (2) to (5), the applicable standards of airworthiness referred to in section 521.31 that are in force on the date of application for the type certificate, unless the applicant

(i) elects to include in the certification basis later amendments to those standards of airworthiness, in accordance with subsection (5), or

(ii) is required to comply with later amendments to the standards of airworthiness in accordance with subsection 521.29(3);

(b) the applicable aircraft emissions standards referred to in section 521.32;

(c) any special conditions that are necessary to ensure that the type design of an aeronautical product having a novel or unusual design feature provides a level of safety equivalent to that provided by the standards of airworthiness in force on the date of application for the type certificate;

(d) any finding of equivalent safety based on any factors or design features that provide for an alternate means of compliance with the standards of airworthiness in force on the date of application for the type certificate; and

(e) any exemptions.

(2) In the case of an aeronautical product to which no complete standards of airworthiness referred to in section 521.31 apply, the applicable standards of airworthiness are the portions of the standards of airworthiness referred to in section 521.31 that are in force on the date of application for the type certificate.

(3) In the case of an aircraft, including its engine and propeller, that is designed in accordance with the requirements of, and accepted for use by, the Department of National Defence, other than an aircraft referred to in paragraph (4)(b), the applicable standards of airworthiness are those referred to in section 521.31

(a) that are appropriate to the type of aircraft, the number and type of its engines and propellers, and its MCTOW; and

(b) that provide a level of safety equivalent to that provided by the standards of airworthiness in force on the date that the aircraft was accepted for use by that Department.

(4) In the case of an aircraft for which a type certificate in the restricted category is requested, the applicable standards of airworthiness are

(a) the standards of airworthiness referred to in section 521.31 that are in force on the date of application for the type certificate, except for those that are inappropriate for the use specified on the application for the type certificate; or

(b) the design and performance requirements established by the Department of National Defence in respect of the aircraft on the date that the aircraft was accepted for use by that Department.

(5) An applicant may elect to include in the certification basis later amendments to the applicable standards of airworthiness referred to in subsections (1) to (4), if the applicant complies with any other amendment that is directly related to those standards.

Standards of Airworthiness

521.31 (1) For the issuance of a type certificate in respect of an aeronautical product, the standards of airworthiness, including the aircraft categories set out in subsection 521.27(1), are those specified in the following chapters of the *Airworthiness Manual*, as applicable:

(a) Chapter 522 - Gliders and Powered Gliders;

(b) Chapter 523 - Normal, Utility, Aerobatic and Commuter Category Aeroplanes;

(c) Chapter 523 - VLA - Very Light Aeroplanes;

(d) Chapter 525 - Transport Category Aeroplanes;

(e) Chapter 527 - Normal Category Rotorcraft;

(f) Chapter 529 - Transport Category Rotorcraft;

(g) Chapter 531 - Manned Free Balloons;

(h) Chapter 533 - Aircraft Engines;

(i) Chapter 535 - Propellers; and

(j) Chapter 541 - Airships.

(2) The standards of airworthiness for the design and installation of an item of aircraft equipment required by Part VI or VII are

(a) those specified in Chapter 551 - Aircraft Equipment and Installation of the *Airworthiness Manual*; or

(b) if no standards of airworthiness for the design and installation of the item of aircraft equipment are specified in Chapter 551 - Aircraft Equipment and Installation of the *Airworthiness Manual*, those specified in the certification basis of the aircraft on which the equipment is installed.

Aircraft Emissions Standards

521.32 The aircraft emissions standards applicable to the issuance of a type certificate are the following:

(a) in the case of an aircraft other than an aircraft for which certification is requested in the restricted category for use in agricultural operations or fire prevention and suppression, the noise standards specified in Subchapter A of Chapter 516 - Aircraft Emissions of the *Airworthiness Manual*;

(b) in the case of a turbine-powered aircraft, the standards respecting the prevention of intentional fuel venting specified in Subchapter B of Chapter 516 - Aircraft Emissions of the *Airworthiness Manual*; and

(c) in the case of an aircraft engine, the smoke and gaseous aircraft emissions standards specified in Subchapter B of Chapter 516 - Aircraft Emissions of the *Airworthiness Manual*.

Conformity with Certification Basis

521.33 An applicant for a type certificate in respect of an aeronautical product shall

(a) demonstrate to the Minister that the aeronautical product conforms to the certification basis established by the Minister under section 521.30;

(b) submit to the Minister a declaration attesting to the demonstration of conformity of the aeronautical product with its certification basis;

(c) make available to the Minister the means by which conformity is established;

(d) in the case of an aircraft, record the noise levels in its flight manual or in a supplement to that manual using the Guidelines for the Administration of Noise Certification Documentation set out in Attachment G of Annex 16, Volume I to the Convention; and

(e) submit to the Minister for approval any manuals, instructions and limitations that are required by the certification basis established in respect of the aeronautical product.

521.34 to 521.43 Reserved

Inspections and Tests

521.44 An applicant for a type certificate in respect of an aeronautical product shall

(a) ensure, before conducting a test, that the item to be tested conforms to the drawings, specifications and manufacturing processes proposed for the type design of the aeronautical product and that the measuring device and test equipment to be used are appropriate and calibrated for the test;

- (b) ensure that the equipment and procedures used for conducting a test flight meet the requirements set out in sections 521.45 and 521.46;
- (c) conduct all the inspections, analyses and tests necessary to demonstrate to the Minister that the type design of the aeronautical product conforms to its certification basis;
- (d) in accordance with the certification plan, submit to the Minister for review the data and reports resulting from the inspections, analyses and tests conducted under paragraph (c); and
- (e) provide the Minister with access to the aeronautical product for the purpose of making any inspection, making any engineering assessment, or conducting or witnessing any test,
 - (i) required to verify the applicant's declaration attesting to the demonstration of conformity of the aeronautical product with its certification basis, or
 - (ii) required to make a determination of the conformity of the aeronautical product with its certification basis.

Test Flights

521.45 (1) An applicant for a type certificate in respect of an aeronautical product who conducts a test flight shall

- (a) make provisions for emergency situations and provide the emergency equipment required for the safety of the test flight personnel;
- (b) conduct the inspections, analyses, structural tests, wind tunnel tests and functional tests of the critical systems and components of the aircraft used for the test flight - including an evaluation of the effect of their failure - to ensure that the aircraft will operate safely within the operating limitations and restrictions specified by the applicant;
- (c) provide a pilot who holds a licence endorsed with a rating appropriate for conducting the test flight; and
- (d) conduct the test flight in accordance with the conditions specified by the Minister in a flight authority issued in respect of that flight.

(2) The applicant shall, before conducting the first test flight of an aircraft type, submit

- (a) a written airworthiness declaration attesting that the aircraft being used for the test flight satisfies the conditions referred to in paragraph (1)(b); and
- (b) a written declaration attesting to the condition of the aircraft and its conformity with the configuration specified for the purposes of the test flight, made by a person authorized to do so by the manufacturer of the aircraft.

Test Flight Operations

521.46 (1) An applicant for a type certificate in respect of an aeronautical product who intends to conduct a test flight and who has the resources, personnel and facilities for

conducting a test flight shall establish and maintain a test flight operations manual that is appropriate to the size, nature and complexity of the test flight operations and that contains

- (a) a statement signed by the person responsible for the test flight operations certifying that the test flight operations are being carried out in accordance with the policies and procedures set out in the manual and in any document incorporated into that manual;
- (b) a description of the system used by the applicant to supervise the test flight operations;
- (c) a description of the system used by the applicant to manage matters relating to safety and risk during the conduct of a test flight;
- (d) a description of record-keeping practices and procedures;
- (e) a description of how the configuration of an aircraft used in a test flight is defined and how a change to that configuration is documented;
- (f) a description of the qualification, training and currency requirements of the test flight crew members;
- (g) a description of the test flight planning procedures; and
- (h) duty time limitations for test flight crew members.

(2) The person responsible for test flight operations shall submit the test flight operations manual and any amendment to the manual to the Minister for approval.

(3) The Minister shall approve the test flight operations manual and any amendment to the manual if they meet the requirements set out in this section.

Function and Reliability Test Flights

521.47 (1) Subject to subsection (3), an applicant for a type certificate in respect of an aircraft shall conduct one or more function and reliability test flights in order to demonstrate to the Minister that the aircraft, its components and its equipment are reliable and function properly.

(2) A function and reliability test flight shall consist of

- (a) in the case of an aircraft that uses a turbine engine of a type not previously used in an aircraft for which a type certificate has been issued, at least 300 hours of operation of the aircraft with a full complement of engines that conform to a type certificate or to an equivalent certificate issued by the airworthiness authority of a foreign state with which Canada has an airworthiness agreement or similar arrangement; or
- (b) in the case of every other aircraft, at least 150 hours of operation of the aircraft.

(3) Subsection (1) does not apply in respect of

(a) the following aircraft:

- (i) aeroplanes having a MCTOW of 2 720 kg (6,000 pounds) or less,

- (ii) gliders,
- (iii) airships having a seating configuration, excluding pilot seats, of nine or less,
- (iv) manned free balloons, or
- (v) restricted category aircraft; or

(h) a change to a type design, unless otherwise determined by the Minister taking into consideration the certification plan submitted under paragraph 521.28(d).

521.48 to 521.56 Reserved

Issuance of a Type Certificate

521.57 (1) Subject to section 6.71 of the Act, the Minister shall issue a type certificate in respect of an aeronautical product if the applicant

- (a) submits the declaration required under paragraph 521.33(b);
- (b) submits a signed undertaking to carry out the responsibilities specified in Division VIII; and
- (c) meets the requirements set out in subsection (2) or (3) in respect of the category of the aeronautical product.

(2) An applicant for a type certificate in respect of an aeronautical product other than a restricted category aircraft shall demonstrate to the Minister that

- (a) the type design of the aeronautical product conforms to its certification basis;
- (b) in the case of an aircraft, no feature or characteristic makes the aircraft unsafe, taking into account the category in which certification is requested;
- (c) subject to paragraph (d), any test flights required under paragraph 521.44(c) and section 521.47 have been conducted; and
- (d) if the function and reliability test flights required under section 521.47 have not been completed, a program exists to ensure their completion before the later of the delivery of the first aircraft and the issuance of the certificate of airworthiness.

(3) An applicant for a type certificate in respect of a restricted category aircraft shall demonstrate to the Minister that

- (a) no feature or characteristic makes the aircraft unsafe when that aircraft is operated within the limitations specified for its intended use; and
- (b) the aircraft
 - (i) has a type design that conforms to its certification basis, or
 - (ii) is of a type manufactured in accordance with the requirements of, and accepted for use by, the Department of National Defence and has been modified for its intended use.

Change to the Type Design Approved in a Type Certificate

521.58 The holder of a type certificate in respect of an aeronautical product who proposes to make a change to the type design approved in the type certificate shall meet the requirements set out in section 521.152.

521.59 to 521.100 Reserved

**DIVISION III - CANADIAN TECHNICAL
STANDARD ORDER (CAN-TSO) DESIGN
APPROVALS**

Application

521.101 This Division applies

(a) in respect of the issuance of a Canadian Technical Standard Order (CAN-TSO) design approval for an appliance or a part; and

(b) to applicants for and holders of a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part.

Eligibility Requirements

521.102 An applicant for a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part shall have, or have access to, the technical capability to conduct the design analyses and tests required to demonstrate the conformity of the appliance or part with its certification basis.

*Application for a Canadian Technical Standard
Order (CAN-TSO) Design Approval*

521.103 An applicant for a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part shall submit to the Minister

(a) an application that contains the information specified on the form published by the Minister entitled Canadian Technical Standard Order (CAN-TSO) Design Approval Application;

(b) a description of the appliance or part that contains its principal design features and its specifications;

(c) a proposed certification basis;

(d) a certification plan that identifies

(i) the means to be used to demonstrate that the appliance or part conforms to the applicable certification basis,

(ii) the documentation that demonstrates the conformity of the appliance or part with the applicable certification basis,

(iii) the resources necessary for carrying out the demonstration of conformity referred to in subparagraph (i), and

(iv) the schedule for carrying out the demonstration of conformity referred to in subparagraph (i);

(e) a draft of the declaration of design and performance referred to in paragraph 521.107(b); and

(f) the means to be used to identify the model number of an appliance or a part and the part number of each component of the appliance or part and how changes to the appliance or part will be identified.

Effective Period of an Application

521.104 (1) Unless an applicant demonstrates, at the time of submitting an application for a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part, that a longer period is required for the design, development and testing of the appliance or part, and for that reason the Minister approves a longer period, the application is effective during one of the following periods, beginning on the date of the application:

(a) two years, in the case of an appliance or a part other than a turbine-powered APU; or

(b) three years, in the case of a turbine-powered APU.

(2) If a Canadian Technical Standard Order (CAN-TSO) design approval is not issued within the applicable effective period referred to in subsection (1), the applicant may

(a) submit a new application for a Canadian Technical Standard Order (CAN-TSO) design approval; or

(b) apply for an extension of the effective period of the original application.

(3) If the effective period of an application for a Canadian Technical Standard Order (CAN-TSO) design approval is extended under paragraph (2)(b), the standards of airworthiness applicable to the appliance or part are those in force on the date that precedes, by one of the periods referred to in subsection (1), the date of the issuance of the Canadian Technical Standard Order (CAN-TSO) design approval.

Certification Basis

521.105 The Minister shall establish, in respect of an appliance or a part, a certification basis consisting of

(a) the applicable standards of airworthiness referred to in section 521.106 that are in force on the date of application for the Canadian Technical Standard Order (CAN-TSO) design approval; and

(b) any finding of equivalent safety based on any factors or design features that provide for an alternate means of compliance with the standards of airworthiness in force on the date of application for the Canadian Technical Standard Order (CAN-TSO).

Standards of Airworthiness

521.106 The standards of airworthiness for the issuance of or a change to a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part are

- (a) those specified in Chapter 537 - Appliances and Parts of the *Airworthiness Manual*; or
- (b) if no standards of airworthiness for the issuance of or a change to a Canadian Technical Standard Order (CAN-TSO) design approval in respect of the appliance or part are specified in Chapter 537 - Appliances and Parts of the *Airworthiness Manual*, the minimum performance standards specified by the Minister.

Conformity with Certification Basis

521.107 An applicant for a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part shall

- (a) demonstrate to the Minister that the appliance or part conforms to the certification basis established by the Minister under section 521.105;
- (b) submit to the Minister a declaration of design and performance that contains
 - (i) the content of the certification basis,
 - (ii) a declaration attesting to the demonstration of conformity of the appliance or part with its certification basis,
 - (iii) information identifying the components of the type design of the appliance or part,
 - (iv) the rated performance of the appliance or part,
 - (v) a reference to the record documenting the means of demonstrating conformity with the certification basis, and
 - (vi) a reference to the maintenance, overhaul and repair manuals;
- (c) make available to the Minister the means by which conformity is established; and
- (d) submit to the Minister for approval any manuals, instructions and limitations that are required by the certification basis established in respect of the appliance or part.

Inspections and Tests

521.108 An applicant for a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part shall

- (a) ensure, before conducting a test, that the item to be tested conforms to the drawings, specifications and manufacturing processes proposed for the type design of the appliance or part and that the measuring device and test equipment to be used are appropriate and calibrated for the test;
- (b) conduct all the inspections, analyses and tests necessary to demonstrate to the Minister that the type design of the appliance or part conforms to its certification basis;

(c) in accordance with the certification plan, submit to the Minister for review the data and reports resulting from the inspections, analyses and tests conducted under paragraph (b); and

(d) provide the Minister with access to the appliance or part for the purpose of making any inspection, making any engineering assessment, or conducting or witnessing any test,

(i) required to verify the applicant's declaration attesting to the demonstration of conformity of the appliance or part with its certification basis, or

(ii) required to make a determination of the conformity of the appliance or part with its certification basis.

***Issuance of a Canadian Technical Standard Order
(CAN-TSO) Design Approval***

521.109 Subject to section 6.71 of the Act, the Minister shall issue a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part if the applicant

(a) meets the requirements set out in section 521.107; and

(b) submits a signed undertaking to carry out the responsibilities specified in Division VIII.

***Change to a Type Design Approved in a Canadian
Technical Standard Order (CAN-TSO) Design
Approval***

521.110 (1) The holder of a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part who proposes to make a change to the appliance or part shall

(a) in the case of a change to the type design, apply for a new Canadian Technical Standard Order (CAN-TSO) design approval under section 521.103; and

(b) in any other case, establish procedures to ensure that the changed appliance or part continues to conform to its certification basis and make the change after the Minister accepts the procedures.

(2) An individual or organization, other than the holder of a Canadian Technical Standard Order (CAN-TSO) design approval in respect of an appliance or a part, who proposes to make a change or repair to the appliance or part shall make an application in respect of that appliance or part for the issuance of a Canadian Technical Standard Order (CAN-TSO) design approval, a supplemental type certificate, or a repair design approval.

521.111 to 521.150 Reserved

DIVISION IV - CHANGES TO A TYPE DESIGN

Application

521.151 This Division applies

- (a) in respect of the approval of a change to the type design of an aeronautical product; and
- (b) to applicants for an approval of a change to the type design of an aeronautical product.

Change to a Type Design

521.152 (1) Subject to section 521.153, no person shall undertake a change to the type design of an aeronautical product that has other than a negligible effect on the weight and centre-of-gravity limits, structural strength, performance, power plant operation, flight characteristics or other qualities affecting its airworthiness or environmental characteristics except in accordance with sections 521.155 to 521.160.

(2) In any other case, no person shall undertake a change to the type design of an aeronautical product except in accordance with section 521.154.

Change to a Type Design Requiring a New Type Certificate

521.153 An applicant for the approval of a change to the type design of an aeronautical product shall submit an application for a new type certificate under section 521.28 if the Minister determines that the change is so extensive in relation to the design, configuration, power or weight of the product - including, in the case of an engine, its power limitations - that a substantially complete investigation by the applicant is necessary to determine conformity with the applicable certification basis.

Change Other than a Change to the Type Design

521.154 The holder of a design approval document who proposes to make a change to an aeronautical product, other than a change to the type design referred to in subsection 521.152(1), shall establish procedures to ensure that the changed aeronautical product continues to conform to its certification basis and make the change after the Minister accepts the procedures.

Application for Approval of a Change to the Type Design

521.155 An applicant for the approval of a change to the type design of an aeronautical product shall submit to the Minister

- (a) an application that contains the information specified on the form published by the Minister entitled Design Change Approval Application;
- (b) a description of the change to the type design that identifies
 - (i) all parts of the type design, including all parts of the approved manuals, that are affected by the change, and
 - (ii) any re-investigations necessary to demonstrate the continued conformity of the aeronautical product with the applicable certification basis, by listing the standards of airworthiness that must be met and the means to be used to demonstrate conformity;

- (c) a proposed certification basis; and
- (d) a certification plan that identifies
 - (i) the means to be used to demonstrate that the change to the type design of the aeronautical product conforms to the applicable certification basis,
 - (ii) the documentation that demonstrates that the change to the type design of the aeronautical product conforms to the applicable certification basis, and
 - (iii) the resources necessary for carrying out the demonstration of conformity referred to in subparagraph (i), and
 - (iv) the schedule for carrying out the demonstration of conformity referred to in subparagraph (i).

Effective Period of an Application

521.156 (1) Unless an applicant demonstrates, at the time of submitting an application for the approval of a change to the type design of an aeronautical product, that a longer period is required for the design, development and testing of the product, and for that reason the Minister approves a longer period, the application is effective during one of the following periods, beginning on the date of the application:

- (a) five years, in the case of a transport category aeroplane or a transport category rotorcraft; or
- (b) three years, in the case of
 - (i) an aircraft other than an aircraft referred to in paragraph (a),
 - (ii) an aircraft engine, or
 - (iii) an aircraft propeller.

(2) If a change to the type design of an aeronautical product is not approved within the applicable effective period referred to in subsection (1), the applicant may

- (a) submit a new application for the approval of a change to the type design of the aeronautical product; or
- (b) apply for an extension of the effective period of the original application.

(3) If the effective period of an application for the approval of a change to the type design of an aeronautical product is extended under paragraph (2)(b), the standards of airworthiness applicable to the change are those in force on the date that precedes, by one of the periods referred to in subsection (1), the date of the approval of the change to the type design.

Certification Basis

521.157 The Minister shall establish, in respect of a change to the type design of an aeronautical product, a certification basis consisting of the applicable standards referred to in sections 521.158 and 521.159.

Standards of Airworthiness

521.158 (1) Subject to subsections (2) to (9), an applicant for the approval of a change to the type design of an aeronautical product shall demonstrate that the product meets the standards of airworthiness recorded in the type certificate data sheets and in force on the date of the application for the change.

(2) The certification basis for the issuance of a repair design approval or a part design approval is that recorded in the type certificate data sheets, and includes any special conditions referred to in subsection (7).

(3) A change to the type design of an aeronautical product may conform to an earlier amendment to a standard referred to in subsection (1) if the Minister determines that the change is not significant in the context of all previous relevant design changes and of all related amendments to the applicable standards recorded in the type certificate data sheets. The change is significant if

- (a) the general configuration or principles of construction are not retained; or
- (b) the assumptions used in obtaining the type certificate for the aeronautical product do not remain valid.

(4) A change to the type design of an aeronautical product may conform to an earlier amendment to a standard referred to in subsection (1) in respect of an area, system, component, item of equipment or appliance if the Minister determines that the area, system, component, item of equipment or appliance

- (a) is not affected by the change; or
- (b) is affected by the change, but conformity with a standard referred to in subsection (1) would not contribute materially to the level of safety or would not be practical.

(5) In respect of an area, system, component, item of equipment or appliance that is affected by a change, a standard referred to in subsection (3) or (4) may not predate a standard that is recorded in the type certificate data sheets or

- (a) in the case of a normal, utility, aerobatic and commuter category aeroplane, the standards set out in section 523.2 of Chapter 523 - Normal, Utility, Aerobatic and Commuter Category Aeroplanes of the *Airworthiness Manual*;
- (b) in the case of a transport category aeroplane, the standards set out in section 525.2 of Chapter 525 - Transport Category Aeroplanes of the *Airworthiness Manual*;
- (c) in the case of a normal category rotorcraft, the standards set out in section 527.2 of Chapter 527 - Normal Category Rotorcraft of the *Airworthiness Manual*; and
- (d) in the case of a transport category rotorcraft, the standards set out in section 529.2 of Chapter 529 - Transport Category Rotorcraft of the *Airworthiness Manual*.

(6) The standards of airworthiness that apply in respect of a change to the type design of an aircraft, other than a rotorcraft, having a MCTOW of 2 720 kg (6,000 pounds) or less, or of a non-turbine rotorcraft having a MCTOW of 1 360 kg (3,000 pounds) or less, are those recorded in the type certificate data sheets, unless the Minister determines that

(a) the change is significant and requires compliance with an amendment to the standards that are recorded in the type certificate data sheets and that apply in respect of the change and with any other standards that are directly related to the change; and

(b) compliance with the amendment referred to in paragraph (a) would contribute materially to the level of safety and would be practical.

(7) An applicant for the approval of a change to the type design of an aeronautical product having a novel or unusual design feature shall comply with any special conditions that are necessary to ensure that the change provides a level of safety equivalent to that provided by the applicable certification basis determined under subsections (1) to (6), (8) and (9).

(8) If a change is made to the type design of a restricted category aircraft, or if a change to the type design of an aircraft results in the aircraft being reclassified as a restricted category aircraft, that aircraft must meet

(a) the standards of airworthiness referred to in section 521.31 applicable to that category of aircraft that are in force on the date of the application for the change; or

(b) the standards of airworthiness recorded in the type certificate data sheets, or an earlier amendment to a standard referred to in paragraph (a), if the standards or the amendment provide a level of safety appropriate for the intended use of that aircraft.

(9) An applicant for the approval of a change to the type design of an aeronautical product may elect to include in the certification basis a later amendment to the standards of airworthiness specified in subsection (1), on the condition that the applicant comply with any other amendment that is directly related to those standards.

Aircraft Emissions Standards

521.159 (1) Subject to subsection (2), an applicant for the approval of a change to the type design of an aeronautical product that results in a change in the noise levels of an aircraft shall demonstrate

(a) that the aircraft meets the noise standards specified in Subchapter A of Chapter 516 - Aircraft Emissions of the *Airworthiness Manual*; or

(b) that the aircraft continues to meet the noise standards that applied before the change was undertaken and that are recorded in the type certificate data sheets or in a document that has been accepted by the Minister as being equivalent to a type certificate for that aircraft.

(2) Subsection (1) does not apply in respect of

(a) a restricted category aircraft for use in agricultural operations or fire prevention and suppression;

- (b) the installation or removal of floats or skis;
- (c) the installation or removal of external equipment on a rotorcraft; or
- (d) an aircraft whose certification basis does not contain noise standards, if the change to the type design does not involve
 - (i) a change in the number or type of propellers,
 - (ii) a change in the number of engines or in the principle of propulsion of the engines, or
 - (iii) in the case of a rotorcraft, a change in the number of rotors or in the principle of operation of the rotors.

(3) An applicant for the approval of a change to the type design of a turbine-powered aircraft shall demonstrate that the aircraft meets the standards respecting the prevention of intentional fuel venting specified in Subchapter B of Chapter 516 - Aircraft Emissions of the *Airworthiness Manual*.

(4) An applicant for the approval of a change to the type design of an aircraft engine shall demonstrate that the aircraft engine meets the smoke and gaseous aircraft emissions standards specified in Subchapter B of Chapter 516 - Aircraft Emissions of the *Airworthiness Manual*.

Conformity with Certification Basis

521.160 (1) An applicant for the approval of a change to the type design of an aeronautical product shall

- (a) demonstrate to the Minister that the product conforms to the certification basis established by the Minister under section 521.157 by conducting the inspections and tests referred to in section 521.44;
- (b) submit to the Minister a declaration attesting to the demonstration of conformity of the product with its certification basis;
- (c) make available to the Minister the means by which conformity is established;
- (d) in the case of an aircraft, record the noise levels in its flight manual or in a supplement to that manual using the Guidelines for the Administration of Noise Certification Documentation set out in Attachment G of Annex 16, Volume I to the Convention;
- (e) submit a signed undertaking to carry out the responsibilities specified in Division VIII; and
- (f) submit to the Minister for approval any manual, instructions and limitations that are required by the certification basis established in respect of the product.

(2) An applicant for the approval of a change to the type design of an aeronautical product other than a restricted category aircraft shall demonstrate to the Minister that

- (a) in the case of an aircraft, no feature or characteristic makes the aircraft unsafe, taking into account the category in which certification is requested; and

(b) the type design of the product provides a level of safety at least equivalent to that provided by the certification basis that applied before the change was undertaken.

(3) An applicant for the approval of a change to the type design of a restricted category aircraft shall demonstrate to the Minister that

(a) no feature or characteristic makes the aircraft unsafe when that aircraft is operated within the limitations specified for its intended use; and

(b) the aircraft has a type design that conforms to its certification basis.

Issuance of Approval of a Change to the Type Design

521.161 Subject to section 6.71 of the Act, the Minister shall approve a change to the type design of an aeronautical product if the applicant meets the requirements set out in section 521.160.

521.162 to 521.200 Reserved

DIVISION V - SUPPLEMENTAL TYPE CERTIFICATES

Application

521.201 This Division applies

(a) in respect of the issuance of a supplemental type certificate as a result of a change to the type design of an aeronautical product; and

(b) to applicants for and holders of a supplemental type certificate in respect of an aeronautical product.

Eligibility Requirements

521.202 An applicant for a supplemental type certificate in respect of a change to the type design of an aeronautical product shall have, or have access to, the technical capability to conduct the design analyses and tests required to demonstrate the conformity of the aeronautical product with its certification basis.

Application for a Supplemental Type Certificate

521.203 Subject to section 521.153, an applicant for a supplemental type certificate in respect of a change to the type design of an aeronautical product for which the Minister has issued or accepted a type certificate shall submit an application to the Minister as specified in section 521.155.

Certification Basis

521.204 The Minister shall establish, in respect of a change to the type design of an aeronautical product, a certification basis consisting of the applicable standards referred to in section 521.157.

Conformity with Certification Basis

521.205 An applicant for a supplemental type certificate in respect of a change to the type design of an aeronautical product shall comply with the requirements set out in section 521.160 within the effective period referred to in section 521.156.

Issuance of a Supplemental Type Certificate

521.206 Subject to section 6.71 of the Act, the Minister shall issue a supplemental type certificate in respect of a change to the type design of an aeronautical product if the applicant complies with the requirements set out in section 521.205.

Change to a Type Design Approved in a Supplemental Type Certificate

521.207 The holder of a supplemental type certificate in respect of an aeronautical product who proposes to make a change to the type design approved in the supplemental type certificate shall comply with the requirements set out in section 521.152.

521.208 to 521.250 Reserved

DIVISION VI - REPAIR DESIGN APPROVALS***Application***

521.251 This Division applies

(a) in respect of the issuance of a repair design approval as a result of a repair to an aeronautical product; and

(b) to applicants for and holders of a repair design approval in respect of an aeronautical product.

Eligibility Requirements

521.252 An applicant for a repair design approval in respect of an aeronautical product shall have, or have access to, the technical capability to conduct the design analyses and tests required to demonstrate the conformity of the aeronautical product with its certification basis.

Application for a Repair Design Approval

521.253 An applicant for a repair design approval in respect of an aeronautical product shall submit an application to the Minister as specified in section 521.155 if the repair is in respect of

(a) an aeronautical product for which the Minister has issued or accepted a type certificate; or

(b) an aircraft registered in a foreign state, or an aeronautical product intended for installation on an aircraft registered in a foreign state, with which Canada has an airworthiness agreement or similar arrangement in respect of the acceptance of the technical data used to repair the aeronautical product.

Certification Basis

521.254 The Minister shall establish a certification basis, in respect of a repair design approval for an aeronautical product, consisting of the applicable standards referred to in section 521.157.

Conformity with Certification Basis

521.255 An applicant for a repair design approval in respect of an aeronautical product shall comply with the requirements set out in section 521.160 within the effective period referred to in section 521.156.

Issuance of a Repair Design Approval

521.256 Subject to section 6.71 of the Act, the Minister shall issue a repair design approval in respect of an aeronautical product if the applicant complies with the requirements set out in section 521.255.

Change to a Repair Design Approved in a Repair Design Approval

521.257 The holder of a repair design approval in respect of an aeronautical product who proposes to make a change to the repair design approved in the repair design approval shall comply with the requirements set out in section 521.152.

521.258 to 521.300 Reserved

DIVISION VII - PART DESIGN APPROVALS

Application

521.301 This Division applies

- (a) in respect of the issuance of a part design approval for a replacement part that is intended to be installed on an aeronautical product; and
- (b) to applicants for and holders of a part design approval in respect of a replacement part.

Eligibility Requirements

521.302 An applicant for a part design approval in respect of a replacement part shall have, or have access to, the technical capability to conduct the design analyses and tests required to demonstrate the conformity of the replacement part with its certification basis.

Application for a Part Design Approval

521.303 (1) An applicant for a part design approval in respect of a replacement part for an aeronautical product for which the Minister has issued or accepted a type certificate shall submit an application to the Minister as specified in section 521.155.

(2) A part design approval shall not be issued if the replacement part

- (a) is subject to an airworthiness limitation;

- (b) is a standard part or a commercial part;
- (c) constitutes a change to the type design of the aeronautical product; or
- (d) creates an airworthiness limitation.

Certification Basis

521.304 The Minister shall establish, in respect of a part design approval for a replacement part, a certification basis consisting of the applicable standards referred to in section 521.157.

Conformity with Certification Basis

521.305 An applicant for a part design approval in respect of a replacement part shall comply with the requirements set out in section 521.160 within the effective period referred to in section 521.156.

Issuance of a Part Design Approval

521.306 Subject to section 6.71 of the Act, the Minister shall issue a part design approval in respect of a replacement part if the applicant complies with the requirements set out in section 521.305.

Change to a Part Design Approved in a Part Design Approval

521.307 The holder of a part design approval in respect of a replacement part who proposes to make a change to the part design approved in the part design approval shall comply with

- (a) in the case of a change to the type design, the requirements set out in Division V; and
- (b) in any other case, the requirements set out in section 521.154.

521.308 to 521.350 Reserved

DIVISION VIII - RESPONSIBILITIES OF A DESIGN APPROVAL DOCUMENT HOLDER

Application

521.351 This Division applies to holders of a design approval document.

Technical Capability

521.352 The holder of a design approval document in respect of an aeronautical product shall have, or have access to, the technical capability

- (a) to conduct design analyses and tests in order to develop the data required to maintain the aeronautical product in an airworthy condition; and
- (b) to carry out the responsibilities specified this Division.

Service Difficulty Reporting

521.353 The holder of a design approval document in respect of an aeronautical product shall report to the Minister, in accordance with Division IX, any reportable service difficulty related to the aeronautical product.

Establishing a Service Difficulty Reporting System

521.354 The holder of a design approval document in respect of an aeronautical product shall establish and maintain a service difficulty reporting system for the purpose of receiving, recording, analyzing and investigating reports and information concerning a reportable service difficulty related to the aeronautical product.

Investigation of Service Difficulty Reports

521.355 (1) When the holder of a design approval document in respect of an aeronautical product receives notice that a service difficulty report has been submitted to the Transport Canada web service difficulty reporting system in relation to the aeronautical product, the holder shall

- (a) investigate the service difficulty and, if it results from a deficiency in the aeronautical product, develop a corrective action to rectify the deficiency; and
- (b) report to the Minister the progress of the investigation and any proposed corrective action.

(2) Subject to section 521.356, if the Minister determines that a corrective action is required to rectify the deficiency, the holder of the design approval document in respect of the aeronautical product shall

- (a) submit the technical data in support of the proposed corrective action to the Minister; and
- (b) undertake any corrective action that the Minister determines is necessary to rectify the deficiency.

Mandatory Changes

521.356 If the Minister determines that a corrective action is required to rectify an unsafe condition in an aeronautical product, the holder of the design approval document in respect of the aeronautical product shall

- (a) submit to the Minister for approval the corrective action required to rectify the unsafe condition; and
- (b) on approval of the corrective action, make available to each owner and each operator of the aeronautical product the information needed to rectify the unsafe condition.

Transfer

521.357 (1) Subject to subsection (2), the Minister shall approve the transfer of a design approval document in respect of an aeronautical product from the holder of the design approval document to a transferee if

(a) the holder

(i) notifies the Minister in writing of the intention to transfer the design approval document,

(ii) provides the Minister with the legal name, address and telephone number of the transferee,

(iii) provides the Minister with the number of the design approval document, the legal name of the manufacturer and the model designation of the aeronautical product that is the subject of the transfer,

(iv) returns to the Minister the original design approval document signed by the holder, and

(v) provides the transferee with the type design of the aeronautical product that is the subject of the transfer and the records specified in paragraph 521.365(a); and

(b) the transferee

(i) applies for the issuance of an amended design approval document,

(ii) complies with the requirements set out in section 521.352, and

(iii) submits a signed undertaking to carry out the responsibilities specified in this Division.

(2) If the transfer involves a foreign state, the holder of the design approval document and the transferee shall comply with the provisions of any airworthiness agreement or similar arrangement that exists between Canada and the foreign state involved in the transfer.

521.358 to 521.364 Reserved

Record Keeping

521.365 The holder of a design approval document in respect of an aeronautical product shall

(a) establish and maintain a system for recording

(i) the type design of the aeronautical product,

(ii) the analyses, tests and inspections that were conducted to demonstrate the conformity of the aeronautical product with its certification basis,

(iii) the certification plan and record and the declaration attesting to the demonstration of conformity of the aeronautical product with its certification basis,

(iv) the data developed by the holder and required to maintain the aeronautical product in an airworthy condition, and

(v) the distribution or initial sale of the aeronautical product;

(b) at the request of the Minister, make available to the Minister the design approval document, the type design and any of the information recorded under paragraph (a); and

(c) notify the Minister in writing if the holder no longer intends to make the records specified in paragraph (a) available for the purpose of manufacture, modification, repair or installation of the aeronautical product or for maintaining the airworthiness of the aeronautical product.

Loss or Disposal of Records

521.366 (1) No person shall dispose of or destroy the records containing the information recorded under paragraph 521.365(a) without the written authorization of the Minister.

(2) The holder of a design approval document in respect of an aeronautical product shall notify the Minister in writing if the records containing the information recorded under paragraph 521.365(a) are lost or destroyed.

Manuals

521.367 (1) The holder of a design approval document in respect of an aeronautical product shall develop and maintain the manuals and their supplements that are required by the certification basis of the aeronautical product and are required to support the operation of the product in service, including

(a) an installation manual;

(b) an operating manual;

(c) a maintenance manual;

(d) an overhaul manual;

(e) servicing instructions;

(f) instructions for continued airworthiness;

(g) an illustrated parts manual; and

(h) service bulletins or equivalent documents.

(2) The holder of a design approval document other than a Canadian Technical Standard Order (CAN-TSO) Design Approval in respect of an appliance or a part shall develop and maintain the manuals and their supplements that are required by the certification basis of the aeronautical product and are required to support the operation of the product in service, including

(a) an aircraft flight manual;

- (b) a structural repair manual;
- (c) supplemental integrity instructions;
- (d) a master minimum equipment list; and
- (e) a maintenance review board report.

(3) The holder of a design approval document in respect of an aeronautical product shall, on request, provide the Minister with up to six copies of the manuals and their supplements referred to in subsections (1) and (2), at no cost, in a format agreed to by the Minister.

Instructions for Continued Airworthiness

521.368 If the certification basis of an aeronautical product requires that instructions for continued airworthiness be developed, the holder of a design approval document in respect of the aeronautical product shall

- (a) provide the instructions for continued airworthiness
 - (i) in the case of an aeronautical product other than an aircraft, to each owner of the aeronautical product on the date of its delivery, and
 - (ii) in the case of an aircraft, to each owner of the aeronautical product on the later of the date of its delivery and the date of the issuance of its first certificate of airworthiness;
- (b) provide any change to the instructions for continued airworthiness
 - (i) in the case of an aeronautical product other than an aircraft, to each of its owners, and
 - (ii) in the case of an aircraft, to each of its operators;
- (c) make available to any person referred to in subsection 571.02(1) the instructions for continued airworthiness and any changes to those instructions; and
- (d) submit to the Minister a plan that identifies how changes to the instructions for continued airworthiness will be made available and distributed to any person referred to in paragraph (a), (b) or (c).

Supplemental Integrity Instructions

521.369 (1) This section applies in respect of an aeroplane for which a type certificate has been issued and that is

- (a) a commuter category aeroplane operated under Subpart 4 of Part VII; or
- (b) a transport category aeroplane operated under Subpart 4 or 5 of Part VII.

(2) Before an aeroplane referred to in subsection (1) meets the applicable in-service criterion specified in subsection (3), the holder of the type certificate in respect of the aeroplane shall

- (a) develop supplemental integrity instructions in accordance with subsection (4) and submit them to the Minister for approval in accordance with subsection (5); and

(b) on their approval, make the supplemental integrity instructions available to each owner and each operator of an aeroplane of that type.

(3) The in-service criterion that determines whether supplemental integrity instructions are required in respect of the aeroplane is that

(a) the aeroplane reaches the design life goal - which is the expected period of operational service of the aeroplane - as established by the type certificate holder, and a corrosion protection and control program is in place; or

(b) the aeroplane completes 20 years of service and

(i) no corrosion protection and control program is in place, or

(ii) no design life goal has been established.

(4) The supplemental integrity instructions required under subsection (2) shall

(a) specify a method for maintaining the conformity of the aeroplane with its certification basis;

(b) incorporate any recommendation resulting from a detailed engineering assessment of the primary airframe structure of the aeroplane and from the service history of that aeroplane;

(c) identify, for periodic review, all principal structural elements whose failure could result in the loss of the aeroplane or significantly reduce the overall structural strength of its airframe;

(d) contain a supplemental structural integrity document that consists of

(i) a description of each principal structural element that has been selected for supplementary inspection, modification or replacement, and its structural location, component or damage site,

(ii) a description of the type of damage expected - such as fatigue, corrosion, delamination, disbondment, accidental damage or multiple-site damage - for each structural location identified, and

(iii) a reference to any existing maintenance manual or service bulletin intended for the aeroplane;

(e) recommend, for each principal structural element that has been selected for supplementary inspection under paragraph (d),

(i) an initial or threshold inspection and the intervals for repeat inspections, and

(ii) inspection methods and inspection procedures appropriate for the type of damage referred to in subparagraph (d)(ii), including any alternatives to the intervals for inspections and to the methods and procedures used;

(f) specify any modifications, replacements or corrosion control measures, optional or mandatory, that could change or terminate the inspection requirements set out in paragraph (e); and

(g) provide guidance for reporting to the Minister the findings from any inspection conducted using the supplemental structural integrity document.

(5) The Minister shall approve the supplemental integrity instructions submitted in respect of an aeroplane if the Minister determines that the instructions provide a level of safety equivalent to that provided by the standards of airworthiness in force at the time the type certificate was issued in respect of the aeroplane.

(6) The holder of a type certificate in respect of an aeroplane who proposes to make a change to the supplemental integrity instructions for the aeroplane shall

(a) submit the change to the Minister for approval; and

(b) on approval of the change, make the changed instructions available to each owner and each operator of an aeroplane of that type.

521.370 to 521.400 Reserved

DIVISION IX - SERVICE DIFFICULTY REPORTING

Form and Submission

521.401 (1) A person who is required to report a service difficulty shall submit to the Minister, for each reportable service difficulty, a separate service difficulty report that contains the information specified in the form published by the Minister entitled *Service Difficulty Report*.

(2) A service difficulty report shall be submitted

(a) by electronic means, such as the Transport Canada web service difficulty reporting system; or

(b) by mail or courier.

Time Limits

521.402 (1) Subject to subsection (2), a person who is required to report a service difficulty shall submit a service difficulty report to the Minister within three working days after the day on which the reportable service difficulty is discovered.

(2) If all of the information required under subsection 521.401(1) is not available within the period specified in subsection (1), an interim service difficulty report containing the following elements may be submitted to the Minister in a manner specified in subsection 521.401(2) within three working days after the day on which the reportable service difficulty is discovered:

(a) the aircraft registration, if applicable;

- (b) the date of the occurrence of the reportable service difficulty;
- (c) a description of the reportable service difficulty; and
- (d) the name, mailing address, and telephone and fax numbers of the person submitting the report.

(3) The person submitting the interim service difficulty report shall submit a complete service difficulty report that complies with the requirements set out in subsection 521.401(1) within 14 days after the day on which the reportable service difficulty is discovered.

Service Difficulty Report Not Required

521.403 A service difficulty report is not required for a reportable service difficulty that has been reported by another person or organization.

521.404 to 521.425 Reserved

DIVISION X - AIRWORTHINESS DIRECTIVES

Application

521.426 This Division applies in respect of aeronautical products for which a design approval document has been issued or accepted by the Minister.

Conditions for Issuance

521.427 (1) The Minister shall issue an airworthiness directive in respect of an aeronautical product if

- (a) an unsafe condition exists in the aeronautical product and the condition is likely to exist or develop in other aeronautical products;
- (b) it is necessary to modify or cancel the requirements of an airworthiness directive issued by the foreign airworthiness authority having jurisdiction over the type design of the aeronautical product because the Minister considers the airworthiness directive inappropriate for reasons related to the environment, safety, the delayed receipt of an instruction issued by the foreign airworthiness authority or reliance on foreign legislation; or
- (c) it is necessary to modify or cancel a Canadian airworthiness directive that is in force, because a condition for issuance referred to in paragraph (a) or (b) has changed or ceased to exist.

(2) The airworthiness directive shall

- (a) identify the unsafe condition;
- (b) identify the affected aeronautical products;
- (c) specify the corrective actions required;
- (d) specify the schedule for completion of the required corrective actions; and

(e) specify its effective date.

(3) This section does not apply if the unsafe condition referred to in paragraph 521.427(1)(a) is rectified by a corrective action taken under section 521.356.

Distribution

521.428 The Minister shall distribute an airworthiness directive to

- (a) the registered owner of a Canadian aircraft affected by the airworthiness directive;
- (b) the manufacturer of an aeronautical product and the holder of the design approval document in respect of the aeronautical product; and
- (c) the airworthiness authority of all known states of registry of the aircraft.

521.429 to 521.450 Reserved

DIVISION XI - FOREIGN AERONAUTICAL PRODUCTS

Application

521.451 This Division applies

- (a) in respect of the issuance of a design approval document for a foreign aeronautical product; and
- (b) to applicants for and holders of a design approval document in respect of a foreign aeronautical product.

Eligibility Requirements

521.452 An applicant for a design approval document in respect of a foreign aeronautical product shall demonstrate to the Minister that the foreign airworthiness authority having jurisdiction over the type design of the foreign aeronautical product has issued or will issue a document equivalent to a design approval document in respect of that foreign aeronautical product.

Application for a Design Approval Document

521.453 (1) Subject to subsection (2), an applicant for a design approval document in respect of a foreign aeronautical product shall submit an application to the Minister as specified in

- (a) section 521.28, in the case of a type certificate;
- (b) section 521.103, in the case of a Canadian Technical Standard Order (CAN-TSO) design approval;
- (c) section 521.203, in the case of a supplemental type certificate;
- (d) section 521.253, in the case of a repair design approval; and

(e) section 521.303, in the case of a part design approval.

(2) An applicant for a design approval document in respect of a foreign aeronautical product shall submit an application in accordance with the provisions of any airworthiness agreement or similar arrangement that exists between Canada and the state of design of the foreign aeronautical product.

Exceptions

521.454 Paragraphs 521.44(a) and (b), section 521.47 and paragraph 521.108(a) do not apply in respect of a foreign aeronautical product.

Issuance of a Design Approval Document

521.455 (1) Subject to subsection (2), if the foreign airworthiness authority having jurisdiction over the type design of a foreign aeronautical product has issued or will issue a document equivalent to a design approval document in respect of the foreign aeronautical product, the Minister shall issue a design approval document if the applicant

(a) complies with the requirements set out in the division applicable to the design approval document that is the subject of the application; and

(b) demonstrates that the foreign aeronautical product conforms to the standards of airworthiness and the aircraft emissions standards referred to in the division applicable to the design approval document that is the subject of the application and that

(i) are in force on the date on which the application for the document equivalent to the design approval document was submitted to the foreign airworthiness authority having jurisdiction over the type design of the foreign aeronautical product, or

(ii) are recorded by the foreign airworthiness authority in the type certificate data sheets in respect of that foreign aeronautical product.

(2) If the airworthiness authority of a foreign state has entered into an airworthiness agreement or similar arrangement with Canada, the Minister shall conduct a type design examination of the foreign aeronautical product that is the subject of the application to determine if the type design of that foreign aeronautical product provides a level of safety equivalent to that specified in this Subpart.

(3) If the Minister determines that the type design of the foreign aeronautical product provides a level of safety equivalent to that specified in this Subpart, the Minister shall, in accordance with the provisions of the airworthiness agreement or similar arrangement referred to in subsection (2), issue a design approval document or accept the design approval document issued by the foreign airworthiness authority in respect of the foreign aeronautical product.

Changes to a Type Design

521.456 (1) If the holder of a design approval document issued under section 521.455 makes a change to the type design of a foreign aeronautical product that alters a condition or limitation prescribed for the foreign aeronautical product by the foreign airworthiness

authority having jurisdiction over the type design of the foreign aeronautical product, the change shall be approved by that airworthiness authority and is subject to a type design examination by the Minister.

(2) If the Minister determines that the change to the type design of the foreign aeronautical product provides a level of safety equivalent to that specified in this Subpart, the Minister shall, in accordance with the provisions of the airworthiness agreement or similar arrangement referred to in subsection 521.455(2), issue an amended design approval document or accept the design approval document issued by the foreign airworthiness authority in respect of the change to the type design of the foreign aeronautical product.



CARs

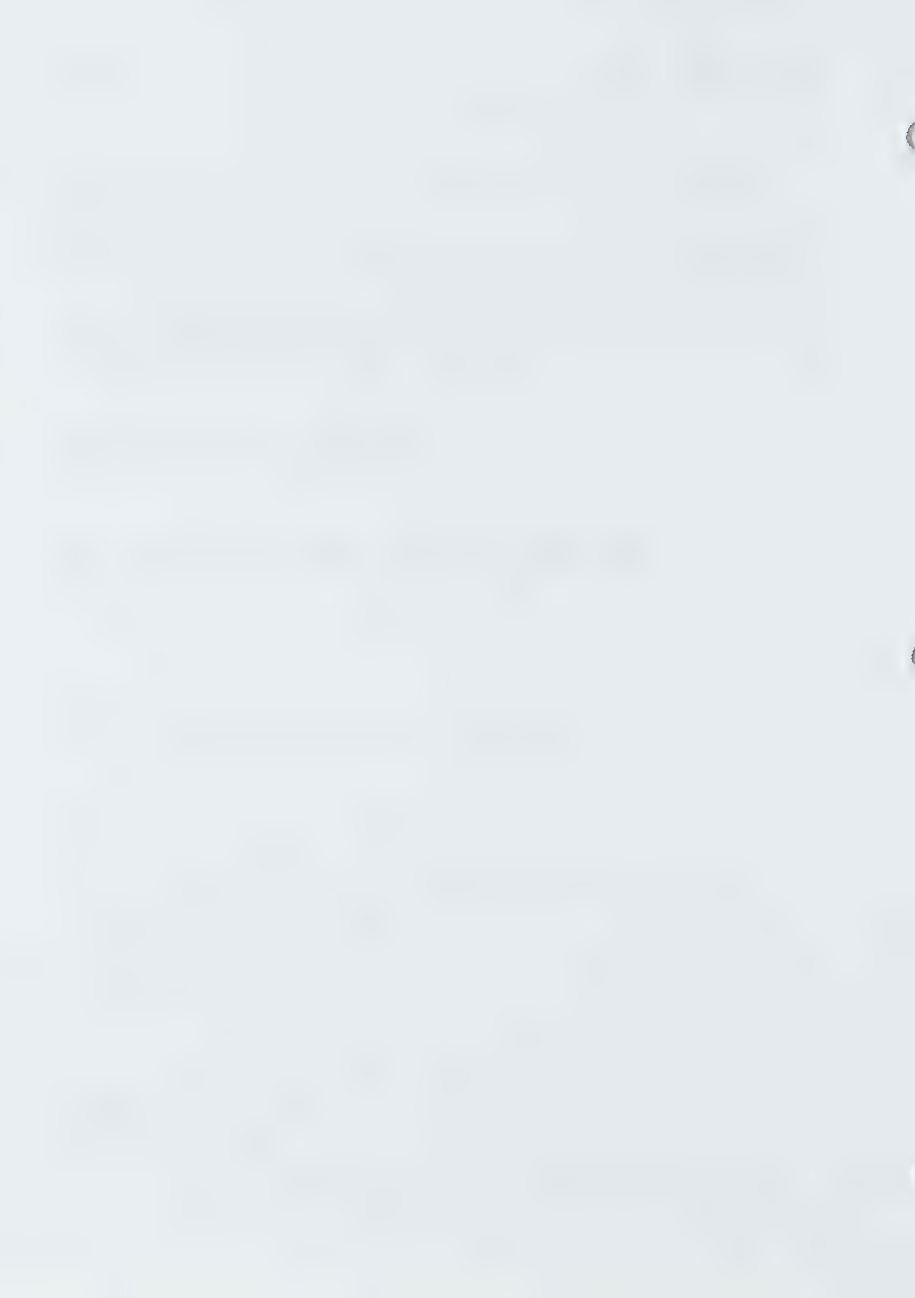
CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS



***SUBPART 22 - GLIDERS AND POWERED GLIDERS
- REPLACED BY CAR 521
(2009/12/01)***

Canada



NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS *

<i>Number</i>	<i>Date of Amendment</i>	<i>Date Entered</i>	<i>Entered by</i>
2009-2	2009/12/02	2012/02/06	///

* All persons making use of this consolidation are reminded that it is not an "official" copy. The original regulations and amendments thereto, as published in Part II of the *Canada Gazette*, should be consulted for the purpose of officially interpreting and applying the regulations.

[illegible]

Table of Change Information	
Notice of Proposed Amendment	Amended Section
<ul style="list-style-type: none">• 2007-027	<ul style="list-style-type: none">• 522.995(d)• 522.1305(i)• 522.1557(b)• 522.1585(l), (m), (n)• 522.1801• 522.1857• 522.1901• 522.1947• Appendix F• Appendix G• Appendix I• Appendix J• Appendix K

This amendment entitled “CS-22” adopts by reference changes introduced by Certification Specifications CS-22 (ED No. 2003/13/RM), issued by the European Aviation Safety Agency (EASA) that entered into force on November 14, 2003.

Chapter 522 of the Airworthiness Manual (AWM) was originally based on the standards of the Joint Aviation Authorities requirements JAR-22. However, on September 28, 2003, the European Aviation Safety Agency (EASA) was created and on November 14, 2003, the new Certification Specifications (CS) were put into force.

The new Certification Specifications for Sailplanes and Powered Sailplanes «CS-22» are introduced by EASA to replace JAR-22. The requirements of CS-22 and are now being used by Transport Canada as the basis for the Canadian airworthiness standards for Gliders and Powered Gliders, supplemented by additional airworthiness requirements based on operational experience and environmental conditions in Canada.

Note that Appendices F, G, I, J and K are now formally included into AWM Chapter 522, as per CS-22 Book 1, and are hence now removed from Transport Canada Advisory Circular 522-001 at Issue 2.

Change 522-6

Published: December 1, 2009

On December 1, 2009, Part V Subpart 21 of the *Canadian Aviation Regulations* (CAR 521) came into force. CAR 521 replaces the following Regulations in Part V—Airworthiness:

Subpart 11 - Approval of the Type Design of an Aeronautical Product

Subpart 13 - Approval of Modification and Repair Designs

Subpart 16 - Aircraft Emissions

Subpart 22 - Gliders and Powered Gliders

Subpart 23 - Normal, Utility, Aerobatic and Commuter Category Aeroplanes

Subpart 25 - Transport Category Aeroplanes

Subpart 27 - Normal Category Rotorcraft

Subpart 29 - Transport Category Rotorcraft

Subpart 31 - Manned Free Balloons

Subpart 33 - Aircraft Engines

Subpart 35 - Aircraft Propellers

Subpart 37 - Aircraft Appliances and Other Aeronautical Products

Subpart 41 - Airships

Subpart 51 - Aircraft Equipment

Subpart 91 - Service Difficulty Reporting

Subpart 93 - Airworthiness Directives

In addition, with publication of CAR 521, the following Chapters of the Airworthiness Manual have been withdrawn:

Chapter 511 - Approval of the Type Design of an Aeronautical Product

Chapter 513 - Approval of Modification and Repair Designs

Standard 591 - Service Difficulty Reporting

Standard 593 - Airworthiness Directives

This change amends section 522.1 to reflect changes in legal drafting style, in terminology and in references required because of the introduction of CAR 521. In addition, subsection 521.31(1) of the CARs is now used to legally enable this Chapter of the AWM.

PART V - AIRWORTHINESS

AIRWORTHINESS MANUAL CHAPTER 522 — GLIDERS AND POWERED GLIDERS

(2007/12/30)

SUBCHAPTER A GENERAL

522.01

For the purposes of this Chapter, wherever the words “glider” and “powered glider” appear, the words “sailplane” and “powered sailplane” respectively shall be substituted therefor. Wherever the word “must” is used, the word “shall” shall be substituted therefor.

522.1 Applicability

(a) This Chapter sets out airworthiness standards for the issue of type certificates, and changes to those certificates, for gliders and powered gliders in the utility U and aerobatic A categories:

(amended 2007/07/16)

(1) Gliders the maximum weight of which does not exceed 750 kg;

(2) Single engined (spark or compression -ignition) powered gliders the design value W/b^2 (weight to span²) of which is not greater than 3 (W [kg], b [m]) and the maximum weight of which does not exceed 850 kg; and

(3) Gliders and powered gliders the number of occupants of which does not exceed two.

(b) Reserved.

(amended 2009/12/01)

(c) Those requirements in this Chapter which apply only to powered gliders are marginally annotated with the letter “P”. Requirements not so marked apply both to gliders and to powered gliders with engines stopped and engine or propeller retracted, where appropriate. In these requirements, the word “glider” means both “glider” and “powered glider”.

(d) Unless specifically stated otherwise, the term “powered glider” includes those powered gliders which may be incapable of complying with 522.51 and/or 522.65(a) and which must consequently be prohibited from taking off solely by means of their own power by a limitation in the Flight Manual. These are referred to in the text as “Self-Sustaining Powered Gliders”. For Self-Sustaining Powered Gliders, the additional requirements in Appendix I are applicable.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

(Change 522-3 (94-04-30))

522.3 Glider Categories

(a) The Utility Category is limited to gliders intended for normal soaring flight. The following aerobatic manoeuvres may be permitted if demonstrated during type certification-

(1) Spins;

(2) Lazy eights, chandelles, stall turns and steep turns;

(3) Positive loops.

(b) Gliders intended for aerobatic manoeuvres additional to those permitted in the Utility Category must be certificated in the Aerobatic Category. The permitted aerobatic manoeuvres must be established during type certification.

(c) Gliders may be certified in more than one category if the requirements of each requested category are met.

(d) Powered gliders may be used for aerotowing gliders if they comply with Appendix K. (amended 2007/07/16)

SUBCHAPTER B FLIGHT GENERAL

522.21 *Proof of Compliance*

(a) Each requirement of this Subchapter must be met at each appropriate combination of weight and c.g. within the range of loading conditions for which certification is requested. This must be shown:

(1) By test upon a glider of the type for which certification is requested or by calculations based on and equal in accuracy to the result of testing; and

(2) By systematic investigation of each critical combination of weight and c.g.

(b) Compliance must be established for all configurations (such as position of air brakes, wing-flaps, landing gear etc.) at which the glider will be operated except as otherwise stated. In demonstrating compliance, the powerplant or propeller, if retractable, must be retracted, except as otherwise stated.

Note: Flight tests required in this Subchapter B do not constitute all the flight testing necessary to show compliance with Chapter 522.

(Change 522-1 (87-08-31))

522.23 *Load Distribution Limits*

(a) The ranges of weight and c.g. within which the glider may be safely operated must be established and must include the range for lateral c.g. if possible loading conditions can result in significant variation. Compliance must be shown over the lateral c.g. range and over a longitudinal c.g. range between the foremost limit of the c.g. and 1% of the standard mean chord or 10 mm, whichever is greater, aft of the aftmost limit of the c.g. (amended 2007/07/16)



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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 23 - NORMAL, UTILITY, AEROBATIC AND
COMMUTER CATEGORY AEROPLANES
- REPLACED BY CAR 521
(2009/12/01)***

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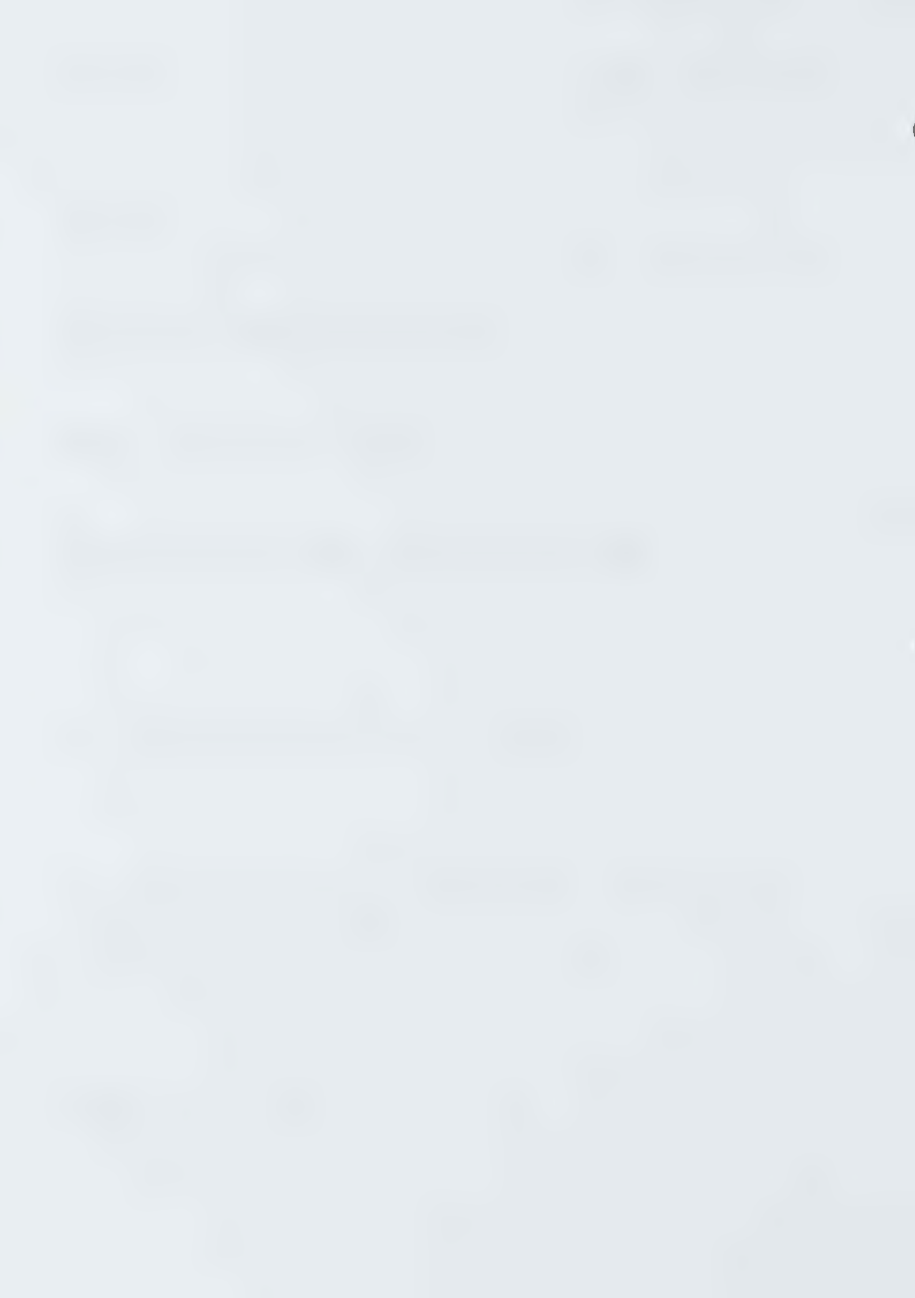
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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 25 - TRANSPORT CATEGORY AEROPLANES
- REPLACED BY CAR 521
(2009/12/01)***

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 27 - NORMAL CATEGORY ROTORCRAFT
- REPLACED BY CAR 521
(2009/12/01)***

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PART V - AIRWORTHINESS

***SUBPART 29 - TRANSPORT CATEGORY ROTORCRAFT
- REPLACED BY CAR 521
(2009/12/01)***

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PART V - AIRWORTHINESS

SUBPART 31 - MANNED FREE BALLOONS
- REPLACED BY CAR 521
(2009/12/01)

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PART V - AIRWORTHINESS

***SUBPART 33 - AIRCRAFT ENGINES
- REPLACED BY CAR 521
(2009/12/01)***

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 35 - AIRCRAFT PROPELLERS
- REPLACED BY CAR 521
(2009/12/01)***

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 37 - AIRCRAFT APPLIANCES AND OTHER
AERONAUTICAL PRODUCTS
- REPLACED BY CAR 521
(2009/12/01)***

Canada 





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TP 6197 E

CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 41 - AIRSHIPS
- REPLACED BY CAR 521
(2009/12/01)***

(546)

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

SUBPART 49 - AMATEUR-BUILT AIRCRAFT

(544)



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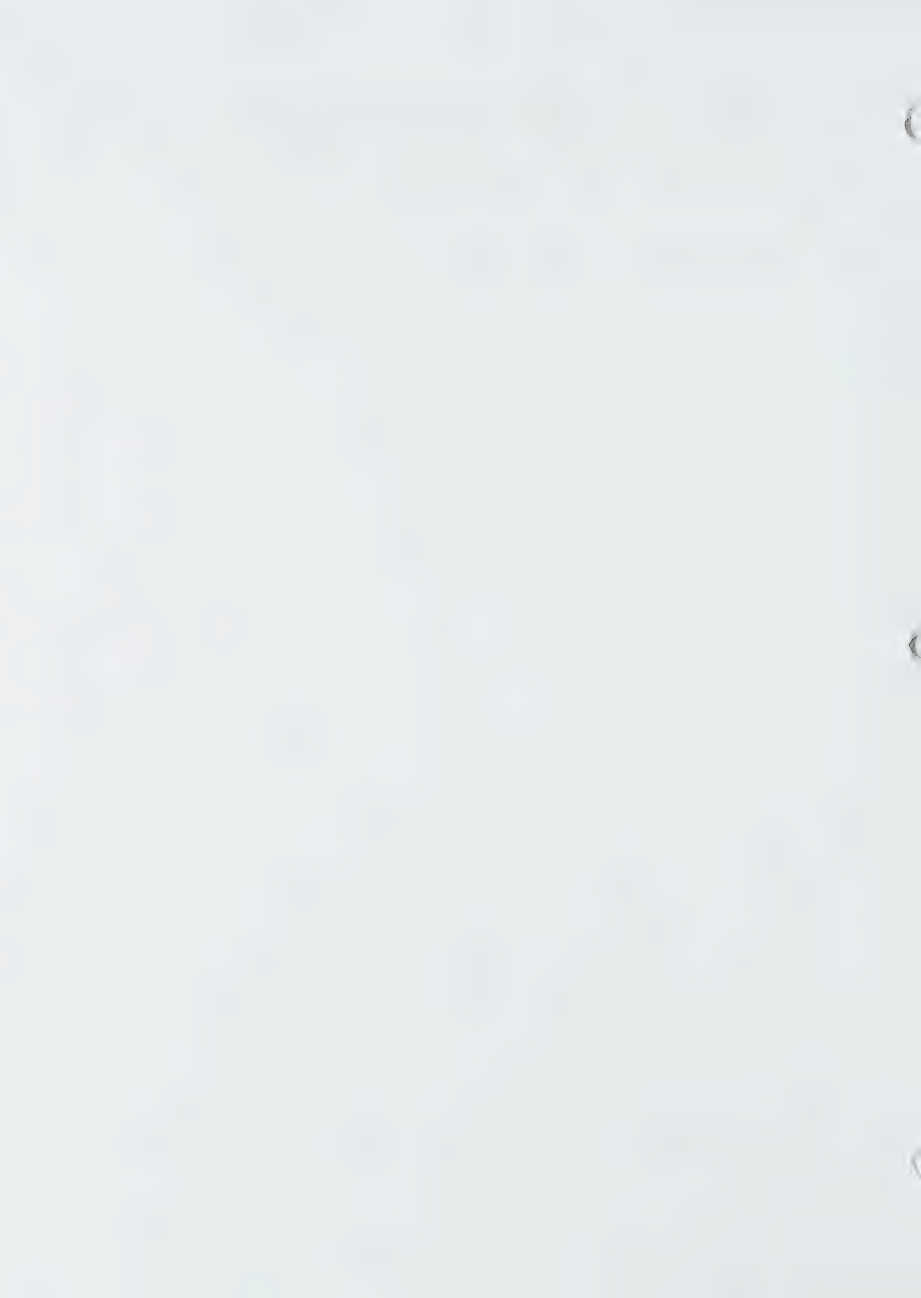
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[illegible]

549 - AMATEUR-BUILT AIRCRAFT

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PART V - AIRWORTHINESS

SUBPART 49 - AMATEUR-BUILT AIRCRAFT

(amended 1998/12/01)

Requirements

549.01 A person who intends to construct an aircraft and obtain, under paragraph 507.03(b), a special certificate of airworthiness in the amateur-built category in respect of the aircraft must

(a) before starting construction,

(i) inform the Minister of the intention to construct the aircraft,

(ii) show that the aircraft design meets the standards specified in Chapter 549 of the *Airworthiness Manual*, and

(iii) show that the major portion of the aircraft will be constructed from raw material and assembled on a non-commercial, non-production basis for educational or recreational purposes; and

(b) during construction and again before the first flight, make the aircraft available to the Minister for inspection.





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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 51 - AIRCRAFT EQUIPMENT
- REPEALED
(2009/12/01)***

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 61 - MANUFACTURE OF
AERONAUTICAL PRODUCTS***

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CAR 561 - MANUFACTURE OF AERONAUTICAL PRODUCTS

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PART V - AIRWORTHINESS

SUBPART 61 - MANUFACTURE OF AERONAUTICAL PRODUCTS

(amended 2007/12/01)

Interpretation

561.01 In this Subpart,

“design approval” means a type certificate, a supplemental type certificate, a part design approval, a Canadian Technical Standard Order (CAN-TSO) design approval or a document equivalent to any of those documents that is issued by the airworthiness authority of a foreign state; (*approbation de conception*)
(amended 2009/12/01)

“manual” means the manual established under section 561.07; (*manuel*)

“Standard 561” means Standard 561 - *Standard for Approved Manufacturers. (norme 561)*

Application

561.02 This Subpart applies in respect of the manufacture of an aeronautical product in respect of which a design approval has been issued but does not apply in respect of

- (a) maintenance;
- (b) the manufacture of standard parts;
- (c) the manufacture of commercial parts; or
- (d) the manufacture of parts during a repair or modification under subsection 571.06(4).

Manufacturer Certificate - Application, Issuance and Amendment

561.03 (1) An applicant for the issuance or amendment of a manufacturer certificate respecting an aeronautical product shall submit an application to the Minister that includes the documents specified in section 561.03 of Standard 561.

(2) An applicant for the issuance or amendment of a manufacturer certificate respecting an aeronautical product shall

- (a) be the holder of, or applicant for, a design approval for that aeronautical product; or
- (b) have written authorization from the holder of a design approval to manufacture that aeronautical product.

(3) An applicant for the issuance or amendment of a manufacturer certificate respecting an aeronautical product shall demonstrate that they have access to all present and future design data, process specifications and other related information necessary for the continuing airworthiness of the aeronautical product.

(4) The Minister shall issue or amend a manufacturer certificate authorizing an applicant to manufacture the aeronautical products set out in the manufacturer certificate if the applicant meets the requirements of this Subpart.

(5) A manufacturer certificate may authorize the manufacture of a limited number of an aeronautical product where

(a) an applicant has made an application for a design approval for that aeronautical product but it has not yet been issued; or

(b) an applicant is about to enter into a license agreement with the holder of the design approval for that aeronautical product.

(6) Unless an expiry date is specified in the manufacturer certificate issued under subsection (4), the certificate shall remain in effect until it is surrendered by the manufacturer or suspended or cancelled.

(7) A manufacturer certificate is not transferable.

(8) Except as provided in section 561.06, the final assembly facilities for an aeronautical product specified in a manufacturer certificate shall be located in Canada.

Management Personnel

561.04 (1) The holder of a manufacturer certificate shall

(a) appoint a person to be responsible for all the activities performed under this Subpart and specified in the manual;

(b) ensure that the person appointed has acquired experience in the areas of responsibility set out in subsection 561.04(1) of Standard 561; and

(c) ensure that the person appointed demonstrates to the Minister, within 30 days after their appointment, knowledge of the topics set out in subsection 561.04(2) of Standard 561.

(2) The Minister shall conduct an interview, in accordance with subsection 561.04(3) of Standard 561, to assess the appointed person's knowledge of the topics referred to in paragraph (1)(c).

(3) The Minister shall notify the person appointed of the results of the assessment and, if applicable, identify any deficiencies in their knowledge of the topics within ten days after the interview.

(4) A person who, at the time this section comes into force, is already performing the functions referred to in paragraph (1)(a) may be appointed under that paragraph without meeting the requirements of paragraphs (1)(b) and (c).

(5) The holder of a manufacturer certificate shall provide the person appointed with the authority and the financial and human resources necessary to ensure that the requirements of this Subpart are met.

(6) The person appointed may assign responsibility for the management of specific activities, systems or programs required by this Subpart to other persons, provided that the assignments and the scope of the assigned responsibilities are specified in the manual.

(7) The holder of a manufacturer certificate shall ensure that no person is appointed under paragraph (1)(a) or remains responsible for the activities referred to in that paragraph if, at the time of their appointment or during their tenure, they have a record of conviction for

- (a) an offence under section 7.3 of the Act; or
- (b) two or more offences in respect of section 561.10 of these Regulations, not arising from a single occurrence.

Resources

561.05 The holder of a manufacturer certificate shall have, and ensure that any supplier referred to in section 561.13 has, the financial and human resources necessary for the manufacture and inspection of any aeronautical product specified in the manufacturer certificate, including those specified in section 561.05 of Standard 561.

Facilities Located in a Foreign State

561.06 If an arrangement exists between Canada and a foreign state concerning the manufacture of an aeronautical product, the holder of a manufacturer certificate may be authorized to perform their activities under the certificate in facilities located in that foreign state if the holder

- (a) submits a written application to that effect to the Minister;
- (b) gives, by a written agreement, an undertaking to the Minister to ensure that the Minister has access to those facilities to verify that the performance of the activities complies with the requirements of the Act and these Regulations, as if those facilities were located in Canada; and
- (c) undertakes to pay the expenses referred to in paragraphs 104.04(1)(a) and (b) incurred by the Department of Transport under paragraph (b).

Manual

561.07 (1) The holder of a manufacturer certificate shall establish, maintain and require the use of a manual that must include the information set out in section 561.07 of Standard 561 and that sets out policies and procedures respecting the construction and inspection of the aeronautical products specified in the manufacturer certificate.

(2) Subject to subsection (4), the person appointed under paragraph 561.04(1)(a) shall ensure that any person who performs work under a manufacturer certificate complies with the manual.

(3) Subject to subsection (4), any person who performs work under a manufacturer certificate shall comply with the manual.

(4) Subject to the following conditions, the holder of a manufacturer certificate and any person who performs work under a manufacturer certificate may temporarily be authorized to use alternative policies and procedures to comply with subsections (2) and (3):

- (a) they have determined that, as a result of unforeseen or temporary circumstances, compliance with the manual would be impossible or unreasonable;

(b) they believe on reasonable grounds that the safety of the aeronautical product can be achieved by complying with the alternative policies and procedures;

(c) they have notified the Minister in writing; and

(d) the Minister has notified them in writing that they can use those alternative policies and procedures.

(5) The holder of a manufacturer certificate shall submit the manual and any subsequent amendment to the Minister for approval.

(6) The Minister shall approve the manual and any subsequent amendment if they meet the requirements of this Subpart and Standard 561.

(7) If the manual no longer meets the requirements of this Subpart or Standard 561, the holder of a manufacturer certificate shall

(a) submit an amendment to the manual for the Minister's approval; or

(b) amend the manual immediately if instructed to do so by the Minister.

(8) The person who has been assigned the responsibility under subsection 561.04(6) shall amend each copy of the manual within 30 days after receiving the Minister's approval of an amendment to it.

(9) A manual may incorporate other documents by reference if it includes policies and procedures to control the incorporated material.

(10) The person appointed under paragraph 561.04(1)(a) shall ensure that any part of the manual or incorporated document that is relevant to the work to be performed is made available to each person who performs that work.

Production Control System

561.08 (1) The holder of a manufacturer certificate shall establish and maintain a production control system that consists of systems and procedures set out in section 561.08 of Standard 561 to ensure that aeronautical products comply with these Regulations throughout the manufacturing process.

(2) The production control system shall be under the control of

(a) the person appointed under paragraph 561.04(1)(a); or

(b) a person assigned the responsibility for the management of the production control system under subsection 561.04(6).

(3) The person referred to in subsection (2) who has control of the production control system shall ensure that the activities carried out under the manufacturer certificate for which they have been assigned responsibility are in compliance with this Subpart.

Quality Assurance Program

561.09 (1) The holder of a manufacturer certificate shall, in order to ensure that all aspects of the activities carried out under the manufacturer certificate continue to comply with these

Regulations, establish and maintain a quality assurance program, independent of the production control system, that

(a) is under the sole control of

(i) the person appointed under paragraph 561.04(1)(a), or

(ii) a person assigned the responsibility for the management of the quality assurance program under subsection 561.04(6); and

(b) meets the requirements specified in section 561.09 of Standard 561.

(2) The person referred to in paragraph (1)(a) shall ensure that records related to the findings from the quality assurance program are distributed to the appropriate manager for corrective action and follow-up in accordance with the procedures specified in the manual.

(3) The person referred to in paragraph (1)(a) shall establish and maintain an audit system that consists of

(a) an initial audit, within 12 months after the day on which the manufacturer certificate is issued, that covers all aspects of the manufacturer's activities;

(b) subsequent audits conducted at the intervals set out in the manual;

(c) a record of each occurrence of compliance or non-compliance found during an audit referred to in paragraph (a) or (b);

(d) procedures for ensuring that each finding of an audit is communicated to them;

(e) follow-up procedures for ensuring that corrective actions are effective; and

(f) a system for recording the findings of initial and periodic audits, corrective actions and follow-ups.

(4) The records required under paragraph (3)(f) shall be retained for the greater of

(a) two audit cycles; and

(b) two years.

(5) The quality assurance program duties related to specific tasks or activities shall be performed by persons who are not responsible for and have not been involved in the performance of the tasks or activities being audited.

Statement of Conformity

561.10 (1) No person shall sign a statement of conformity in respect of an aeronautical product unless

(a) the statement contains the elements referred to in section 561.10 of Standard 561;

(b) the person has been authorized to do so by the person in control of the production control system;

(c) the aeronautical product is specified in the manufacturer certificate; and

(d) the aeronautical product has been manufactured in accordance with this Subpart.

(2) No person shall authorize a person to sign, on behalf of the holder of a manufacturer certificate, a statement of conformity unless the person being authorized has complied with the policies and procedures set out in the manual and has successfully completed the training required under section 561.11.

Training Program

561.11 The holder of a manufacturer certificate shall

(a) establish and maintain a training program that includes the initial training, updating and any other training set out in section 561.11 of Standard 561 to ensure continued qualification that is appropriate to the function to be performed or supervised; and

(b) ensure that persons who are authorized to perform or supervise the performance of any function required under this Subpart are trained in respect of the parts of the policies and procedures of the holder of the manufacturer certificate and the parts of these Regulations applicable to that function.

Personnel Records

561.12 (1) The holder of a manufacturer certificate shall establish and maintain a personnel record for each employee of the manufacturer and retain each record for at least three years after the end of their employment.

(2) A personnel record may be in paper or electronic form and shall include all of the employee's qualifications, all authorizations to sign a statement of conformity pursuant to section 561.10 and a description of the training referred to in section 561.11.

(3) The holder of a manufacturer certificate shall ensure that a copy of any record required by this section is provided to the employee referred to in the record on the completion of each training activity or the granting of an authorization to sign a statement of conformity under section 561.10.

Control of Suppliers

561.13 (1) The holder of a manufacturer certificate who contracts work to a supplier shall ensure that

(a) a written agreement with the supplier specifies the work to be performed by the supplier and provides that the Minister may have access to and inspect the supplier's facilities and records to ensure compliance with this Subpart;

(b) work is contracted only to suppliers that have been evaluated in accordance with the policies and procedures set out in the manual;

(c) work is done under the holder's supervision and is subject to the quality assurance program set out in section 561.09;

(d) the supplier's capability to perform the contracted work is evaluated and monitored; and

(e) the aeronautical product conforms to its approved design.

(2) If a supplier holds, in respect of an aeronautical product, a manufacturer certificate or an equivalent document issued by a foreign state with which Canada has an airworthiness

agreement or similar arrangement, the issuance of the supplier's own statement of conformity in respect of that product is considered as meeting the requirements of paragraphs (1)(c) to (e).

(3) No supplier who performs work for a holder of a manufacturer certificate under this Subpart shall subcontract the work to another supplier without having first obtained the written consent of the holder of a manufacturer certificate.

Aeronautical Product Records

561.14 (1) The holder of a manufacturer certificate shall establish and maintain records for each aeronautical product manufactured under a manufacturer certificate, including those specified in section 561.14 of Standard 561.

(2) The holder of a manufacturer certificate shall ensure that product records are kept for at least three years after the day on which the statement of conformity was signed.

Service Difficulty Reporting

561.15 The holder of a manufacturer certificate shall report to the Minister, in accordance with Division IX of Subpart 21 of Part V, any reportable service difficulty related to an aeronautical product being manufactured.
(amended 2009/12/01)

Cessation of Manufacturing

561.16 The holder of a manufacturer certificate shall notify the Minister in writing of the permanent cessation of the manufacture of an aeronautical product specified in the manufacturer certificate within 30 days after cessation.



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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 71 - AIRCRAFT
MAINTENANCE REQUIREMENTS***

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CAR 571 - AIRCRAFT MAINTENANCE REQUIREMENTS

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PART V - AIRWORTHINESS

SUBPART 71 - AIRCRAFT MAINTENANCE REQUIREMENTS

Application

571.01 This Subpart applies, with the exception of ultra-light aeroplanes and hang gliders, in respect of the maintenance and elementary work performed on

(a) Canadian aircraft;

(b) foreign aircraft operated under Part IV or VII;

(amended 2000/12/01)

(c) foreign aircraft, other than aircraft referred to in paragraph (b), if the maintenance or elementary work is performed under the terms of an agreement or technical arrangement between Canada and the state of registry of the aircraft; and

(amended 2000/12/01)

(d) parts intended for installation on aircraft referred to in paragraphs (a) to (c).

(amended 2000/12/01)

Maintenance and Elementary Work Performance Rules

(amended 2000/12/01)

571.02 (1) Subject to subsection (2), a person who performs maintenance or elementary work on an aeronautical product shall use the most recent methods, techniques, practices, parts, materials, tools, equipment and test apparatuses that are

(a) specified for the aeronautical product in the most recent maintenance manual or instructions for continued airworthiness developed by the manufacturer of that aeronautical product;

(b) equivalent to those specified by the manufacturer of that aeronautical product in the most recent maintenance manual or instructions for continued airworthiness; or

(c) in accordance with recognized industry practices at the time the maintenance or elementary work is performed.

(2) A person who performs maintenance or elementary work pursuant to subsection (1) shall ensure that any measuring device or test equipment used

(a) meets the specifications of the manufacturer of the aeronautical product with respect to accuracy, taking into account the intended use; and

(b) if calibration requirements are published by the manufacturer of the measuring device or test equipment, is calibrated by means traceable to a national standard.

(amended 2003/06/01)

(3) Except if the work is performed in respect of an aircraft that is operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, no person shall supervise, or perform without supervision, an inspection using a method set out in column I of an item of Schedule I to this Subpart, unless the person holds the personnel

certification set out in column II of that item.

(amended 2002/03/01)

Recording of Maintenance and Elementary Work

571.03 A person who performs maintenance or elementary work on an aeronautical product shall ensure that

- (a) the details required by Chapter 571 of the *Airworthiness Manual* are entered in the technical record for the aeronautical product, in respect of the task performed; and
- (b) the technical record is accurate with respect to any outstanding elements of the work performed, in particular, the need to secure any fastening device that was disturbed to facilitate the work.

Specialized Maintenance

571.04 No person shall perform the specialized maintenance set out in Schedule II to this Subpart on an aeronautical product other than an aircraft operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, except in accordance with

(amended 2002/03/01)

- (a) a maintenance policy manual (MPM) established by the holder of an approved maintenance organization (AMO) certificate issued pursuant to Section 573.02 with a rating of a category appropriate to the work to be performed; or
- (b) a foreign document equivalent to an MPM established by a maintenance organization approved under the laws of a state that is party to an agreement with Canada, and the agreement provides for recognition of the work to be performed.

Maintenance of Aircraft Operated under Part IV or VII

(amended 2000/12/01)

571.05 Except in the case of a balloon, no person shall perform maintenance on an aircraft operated under Part IV or VII, or install on one of the foregoing a part that has undergone maintenance, unless the maintenance on that aircraft or part has been performed in accordance with

(amended 2000/12/01)

- (a) a maintenance policy manual (MPM) established by the holder of an approved maintenance organization (AMO) certificate issued pursuant to Section 573.02 with a rating of a category appropriate to the work to be performed; or
- (b) a foreign document equivalent to an MPM established by a maintenance organization approved under the laws of a state that is party to an agreement with Canada and the agreement provides for recognition of the work to be performed.

Repairs and Modifications

571.06 (1) Except as provided in subsection (5) and in the case of aircraft that are operated under a special certificate of airworthiness in the owner-maintenance classification, a person who signs a maintenance release in respect of a major repair or major modification on an aeronautical product shall ensure that the major repair or major modification conforms to the requirements of the relevant technical data

(amended 2002/03/01)

(a) that have been approved or the use of which has been approved within the meaning of the term “approved data” in section 571.06 of the *Airworthiness Manual*; or
(amended 2000/12/01)

(b) that have been established within the meaning of the term “specified data” in section 571.06 of the *Airworthiness Manual*.
(amended 2000/12/01)

(2) Except as provided in subsection (5), a person who signs a maintenance release in respect of a repair or modification, other than a major repair or major modification, shall ensure that the repair or modification conforms to the requirements of the relevant technical data within the meaning of the term “acceptable data” in section 571.06 of the *Airworthiness Manual*.
(amended 2000/12/01)

(3) Where an additional flight authority has been issued pursuant to paragraph 507.08(1)(c) in respect of an aircraft, no person shall change the configuration of the aircraft in such a manner that the aircraft no longer meets the conditions subject to which the flight authority applicable to the aircraft prior to the modification was issued, unless

(a) the person makes an entry in the aircraft journey log required by Section 605.94 indicating the flight authority that is in effect for the modified aircraft; or

(b) the change is made in accordance with technical dispatch procedures required by Section 706.06.

(4) Repairing or modifying an aeronautical product may include the making of a part in conformity with the standards specified in Section 571.06 of the *Airworthiness Manual*, if no part made is

(a) marked with the part number specified in the type design; or

(b) installed by a person or organization other than the person or organization that made the part.

(amended 2003/06/01)

(5) A person who signs a maintenance release in respect of a repair or modification performed on a foreign aeronautical product under the terms of an agreement or a technical arrangement between Canada and the aircraft's state of registry shall ensure that the repair or modification conforms to the requirements of the relevant technical data that are specified in the agreement or technical arrangement.

(amended 2000/12/01)

Installation of New Parts

571.07 (1) No person shall install a new part on an aeronautical product unless the part meets the standards of airworthiness applicable to the installation of new parts and, subject to subsections (2) and (3), has been certified under Subpart 61.
(amended 2007/12/01)

(2) No certification referred to in subsection (1) is required where

(a) a new part is a foreign-manufactured part that is certified pursuant to an agreement with Canada, which agreement provides for the acceptance of export airworthiness certification;

(b) a new part is a foreign-manufactured part that is obtained from a manufacturer holding a type design recognized in Canada and the part is certified in accordance with the laws of the state of manufacture;

(c) a new part, whose accompanying documentation has been verified, has been inspected in accordance with the requirements of Chapter 571 of the *Airworthiness Manual*;

(d) a new part is installed on an aircraft that is operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification; or
(amended 2002/03/01)

(e) a part is made in accordance with subsection 571.06(4).

(3) No certification referred to in subsection (1) is required in respect of a new part that bears markings identifying it as a part specified in the type design and that

(a) is a standard part;
(amended 2002/03/01)

(b) is a commercial part; or
(amended 2002/03/01)

(c) is a part that was not originally designed and manufactured for aeronautical use but has been approved for use on the aeronautical product in the type design.
(amended 2009/12/01)

Installation of Used Parts

571.08 (1) No person shall install a used part on an aeronautical product, other than aircraft that are operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, unless the part meets the standards of airworthiness that are applicable to the installation of used parts and are set out in Chapter 571 of the *Airworthiness Manual* and
(amended 2002/03/01)

(a) is an airworthy part that has been removed from an aircraft for immediate installation on another aircraft;

(b) is an airworthy part that has undergone maintenance for which a maintenance release has been signed pursuant to paragraph 571.11(2)(c); or

(c) has been inspected and tested to ensure that the part conforms to its type design and is in a safe condition, and a maintenance release has been signed to that effect.
(amended 2002/03/01)

(2) If, under the terms of a loan agreement or an air operator parts pooling agreement, a used part has been obtained from a source not subject to these Regulations, no person shall permit the part to remain in service for longer than 90 days unless specifically authorized by the Minister on receipt of documentation demonstrating that the part conforms to the applicable type design.
(amended 2002/03/01)

Installation and Disposal of Life-limited Parts
(amended 2002/03/01)

571.09 (1) No person shall install a used life-limited part on an aeronautical product unless the part meets the standards of airworthiness applicable to the installation of life-limited parts and

(a) the technical history of the part within the meaning of Section 571.09 of the *Airworthiness Manual* is available to show that the time in service authorized for that part in the type certificate governing the installation has not been exceeded; and

(b) the history referred to in paragraph (a) is incorporated into the technical record for the aeronautical product on which the part is installed.

(2) No person shall install a used life-limited part in a place other than that from which it was removed unless the part is installed
(amended 2002/03/01)

(a) in the same or in an identical position on another aeronautical product bearing the same part number as that from which the part was removed; or

(b) in conformity with the requirements in respect of technical data that have been approved or the use of which has been approved within the meaning of Section 571.09 of the *Airworthiness Manual*.

(3) When a life-limited part has reached the time in service authorized in its type design, the part shall be
(amended 2002/03/01)

(a) rendered unusable; or

(b) identified as not airworthy and kept segregated from airworthy parts.

Maintenance Release

571.10 (1) No person shall sign a maintenance release required pursuant to Section 605.85 or permit anyone whom the person supervises to sign a maintenance release, unless the standards of airworthiness applicable to the maintenance performed and stated in Chapter 571 of the *Airworthiness Manual* have been complied with and the maintenance release meets the applicable requirements specified in Section 571.10 of the *Airworthiness Manual*.

(2) Except as provided in subsection (4), a maintenance release shall include the following, or a similarly worded, statement:

“The described maintenance has been performed in accordance with the applicable airworthiness requirements.”

(3) No maintenance release is required in respect of any task designated as elementary work in the *Aircraft Equipment and Maintenance Standards* that is performed by

(a) in the case of a glider, a balloon or an unpressurized small aircraft that is powered by a piston engine and not operated pursuant to Part IV or VII, the pilot of the aircraft;

(b) in the case of an aircraft operated under Part IV or VII, a person who has been trained and authorized in accordance with the flight training unit's or the air operator's maintenance control manual (MCM), approved under Subpart 6 of Part IV or of Part VII,

respectively; or
(amended 2000/12/01)

(c) in the case of an aircraft operated pursuant to Subpart 4 of Part VI, a person who has been trained in accordance with those Sections of a private operator's operations manual that contain details of the operator's maintenance control system.

(4) Where a person signs a maintenance release in respect of maintenance performed on an aircraft, the satisfactory completion of which cannot be verified by inspection or testing of the aircraft on the ground, the maintenance release shall be made conditional on the satisfactory completion of a test flight carried out pursuant to subsections 605.85(2) and (3), by the inclusion of the phrase "subject to satisfactory test flight".

(5) No person shall sign a maintenance release in respect of specialized maintenance unless the requirements of Section 571.04 have been met.

Persons Who May Sign a Maintenance Release

(amended 2000/12/01)

571.11 (1) Except as provided in subsections (2) and (7), no person other than the holder of an aircraft maintenance engineer (AME) licence issued under Part IV, specifying a rating appropriate to the aeronautical product being maintained, shall sign a maintenance release as required by section 571.10.

(2) A person other than a person described in subsection (1) may sign a maintenance release if

(a) in the case of maintenance performed outside Canada,

(i) the person is authorized to sign under the laws of a state that is party to an agreement or a technical arrangement with Canada and the agreement or technical arrangement provides for such certification, or

(ii) if no agreement or technical arrangement provides for such certification, the person holds qualifications that the Minister determines to be equivalent to those of a person described in subsection (1);

(b) in the case of maintenance performed on an aircraft that is operated under a special certificate of airworthiness in the amateur-built classification, the person is an owner of the aircraft;

(c) in the case of maintenance performed on a part that is intended for installation on an aircraft, the person has been authorized to sign by the holder of an approved maintenance organization (AMO) certificate issued under section 573.02, and
(amended 2002/03/01)

(d) in the case of maintenance performed on an aircraft that is operated under a special certificate of airworthiness in the owner-maintenance classification, the person is a licensed pilot and an owner of the aircraft.
(amended 2002/03/01)

(3) Except as provided in subsection (7), no person shall sign a maintenance release in respect of maintenance performed on an aircraft operated under Part IV or VII, or on parts intended to be installed on the aircraft, unless

(a) the person is authorized to sign in accordance with a maintenance policy manual (MPM) established by the holder of an AMO certificate issued under section 573.02 with a rating of a category appropriate to the work performed; or

(b) if the maintenance is performed outside Canada, the person is authorized to sign in accordance with a foreign document equivalent to an MPM, established by a maintenance organization approved under the laws of a state that is party to an agreement or technical arrangement with Canada and the agreement or technical arrangement provides for such certification.

(4) Except as provided in subsection (5), no person shall sign a maintenance release in respect of maintenance performed on a transport category aeroplane or a turbine-powered helicopter, unless the person

(a) has successfully completed a course of maintenance training that has been approved by the Minister and that is applicable to the type of aircraft, engine or system on which the maintenance is performed, in accordance with Appendix M of Chapter 571 of the *Airworthiness Manual*; or

(b) held a type rating applicable to the type of aircraft, engine or system on which the maintenance is performed, issued by the Minister before August 1, 1999.

(5) The holder of an applicable AME licence may sign a maintenance release in respect of maintenance performed on a transport category aeroplane or a turbine-powered helicopter that consists of any of the types of work set out in Schedule III without having successfully completed the course required by paragraph (4)(a) and without having held the type rating required by paragraph (4)(b).

(6) If a maintenance release is signed by a person in respect of work performed by another person, the person signing the maintenance release must personally observe the work to the extent necessary to ensure that it is performed in accordance with the requirements of any applicable standards of airworthiness and, specifically, the requirements of sections 571.02 and 571.10.

(7) A person who is not the holder of an AME licence specifying a rating appropriate to the aeronautical product being maintained may sign a maintenance release if the person holds a restricted certification authority issued in accordance with subsection (8), in respect of a particular case specified on the restricted certification authority.

(8) The Minister shall issue a restricted certification authority and specify therein its validity period and the scope of the work that may be performed, if

(a) an application is made in accordance with section 571.11 of the *Airworthiness Manual*;

(b) the applicant demonstrates to the Minister that there is no holder of an AME licence specifying a rating appropriate to the aeronautical product being maintained available within a geographical area accessible within one hour by surface transportation;

(c) the person to whom the restricted certification authority is to be issued has received the training and has the knowledge equivalent to that of a holder of an AME licence specifying a rating appropriate to the aeronautical product being maintained; and

(d) the level of aviation safety is not affected by the issuance of the restricted certification authority.

Reporting Major Repairs and Major Modifications

571.12 A person who performs a major repair or major modification on an aeronautical product or installs on an aircraft a part that has undergone a major repair or major modification shall report the action to the Minister in accordance with the procedures specified in Section 571.12 of the *Airworthiness Manual*.

Installation of Parts (General)

571.13 (1) Subject to Sections 571.07 to 571.09, no person shall install a part on an aeronautical product unless the part is
(amended 2002/03/01)

(a) inspected and its accompanying documentation verified in accordance with a procedure that ensures that the part conforms to its type design, as is indicated by the maintenance release; and

(amended 2002/03/01)

(b) installed in accordance with the requirements of Section 571.13 of the *Airworthiness Manual*.

(2) If a part is obtained from an aeronautical product that was damaged or permanently withdrawn from service, the part shall not be installed unless it
(amended 2002/03/01)

(a) can be traced to the manufacturer certificate holder; and

(b) is inspected in conformity with the instructions for continued airworthiness or, if the part has been repaired or modified, it can be ascertained that the work was performed in accordance with approved data within the meaning of section 571.06 of the *Airworthiness Manual*.

SCHEDULE I*(Subsection 571.02(3))***Personnel Certification for Non-Destructive Testing (NDT)**

Item	Column I Method	Column II Personnel Certification
1	NDT using liquid penetrant, magnetic particle, eddy current or ultrasonic methods, not performed pursuant to Appendix K of Chapter 571 of the <i>Airworthiness Manual</i>	CAN/CGSB 48.9712-95, Level 2 or Level 3; MIL-Std-410; or Specification ATA 105 (amended 2000/12/01)
2	NDT using radiographic methods	Level 2 or Level 3 of the following standards: CAN/CGSB 48.9712-95 or MIL-Std-410; or Level 2 or Level 3 of the following specification: ATA 105.

SCHEDULE II

(amended 2000/12/01)

*(Section 571.04)***Specialized Maintenance**

The following tasks constitute the specialized maintenance referred to in section 571.04 of these Regulations.

Airframe

1. (1) The modification, repair or replacement by riveting, bonding or laminating, or the making of any of the following airframe parts is structural specialized maintenance: (amended 2003/06/01)

- (a) a box beam;
- (b) a wing stringer or chord member;
- (c) a spar;
- (d) a spar flange;
- (e) a member of a truss-type beam;
- (f) the web of a beam;
- (g) a keel or chine member of a flying boat hull or a float;
- (h) a corrugated sheet compression member in a wing or tail surface;
- (i) a wing main rib;
- (j) a wing or tail surface brace strut;
- (k) an engine mount;
- (l) a fuselage longeron or frame;
- (m) a member of a side truss, horizontal truss or bulkhead;
- (n) a seat support brace or bracket, excluding the replacement of seat rails; (amended 2003/06/01)
- (o) a seat rail replacement for transport category aircraft;
- (p) a landing gear strut or brace strut;
- (q) an axle;
- (r) a wheel; and
- (s) a ski or ski pedestal, excluding the replacement of a low-friction coating.

(2) The modification or repair of any of the following parts of an airframe is structural specialized maintenance:
(amended 2003/06/01)

- (a) aircraft skin, or the skin of an aircraft float, if the work requires the use of a support, jig or fixture;
- (b) aircraft skin that is subject to pressurization loads, if the damage to the skin measures more than 15 cm (6 inches) in any direction;
- (c) a load-bearing part of a control system, including a control column, pedal, shaft, quadrant, bellcrank, torque tube, control horn and forged or cast bracket, but excluding
 - (i) the swaging of a repair splice or cable fitting, and
 - (ii) the replacement of a push-pull tube end fitting that is attached by riveting; and
- (d) any other structure that a manufacturer has identified as a primary structure in its maintenance manual, structural repair manual or any instructions for continuing airworthiness.

(amended 2003/06/01)

Engine

2. Any of the following types of tasks is engine specialized maintenance:
(amended 2003/06/01)

- (a) the reassembly of a multi-part engine crankshaft or a crankshaft equipped with a dynamic counterweight system;
- (b) the reassembly of the crankcase of a reciprocating engine that is equipped with an integral supercharger or a propeller reduction gear;
- (c) the overhaul of a reciprocating engine that is equipped with an integral or turbo supercharger; and
- (d) the overhaul of a turbine engine or turbine engine module.

Propeller

3. Any of the following types of propeller repair, if the work is beyond the limits recommended in the manufacturer's maintenance manual or service instructions for service in the field is propeller specialized maintenance:
(amended 2003/06/01)

- (a) the re-contouring, twisting, shortening or straightening of a propeller blade or the blending of damage thereto;
- (b) the repair or machining of a propeller hub, excluding the removal of surface corrosion or application of a protective coating;
- (c) the reinstallation of a metal leading edge sheath or tip of a wooden blade;
- (d) the replacement of the outer protective coating on a wooden blade, excluding the restoration of varnish;

- (e) the repair of an elongated propeller attachment or propeller blade attachment bolt hole;
- (f) the inlaying of a repair patch on a wooden blade;
- (g) the repair of a composite blade; and
- (h) an overhaul or repair involving the reassembly of a controllable-pitch propeller, excluding the reassembly of a propeller that has been disassembled for shipping purposes, or the replacement of seals.

Avionics

4. (1) The repair of avionics components and systems is avionics specialized maintenance, except for:
(amended 2003/06/01)

(a) repairs of wiring and connectors;
(amended 2003/06/01)

(b) replacement of connectors and electrical components with identical or equivalent items;
(amended 2003/06/01)

(c) replacement of antennas with identical or equivalent items;
(amended 2003/06/01)

(d) replacement of integral fuses and lighting components when the line replaceable unit (LRU) is designed for flight-line replacement of these components;
(amended 2003/06/01)

(e) replacement of an avionics LRU provided that any testing required can be done using standard test equipment, built-in test equipment (BITE) or equipment specified in the aircraft manufacturer's instructions for continuing airworthiness;
(amended 2003/06/01)

(f) on-site management of passenger entertainment systems performed in accordance with the applicable instructions in the maintenance manual of the aircraft or systems manufacturer or the manufacturer's instructions for continuing airworthiness; and
(amended 2003/06/01)

(g) routine maintenance that is described in the aircraft manufacturer's maintenance manual or instructions for continuing airworthiness or performed in accordance with currently recognized industry practices for service in the field.
(amended 2003/06/01)

(2) Any avionics system installation or modification is avionics specialized maintenance except for:
(amended 2003/06/01)

(a) installation of ELT systems conforming to CAN-TSO-C91/C91a;
(amended 2009/12/01)

(b) installation of single VHF communication or single integrated

navigation/communication systems that are not interfaced with any other system, other than an intercom system;
(amended 2003/06/01)

(c) installation of VFR long-range navigation systems which are not interfaced with any other systems;
(amended 2003/06/01)

(d) modifications to existing avionics installations, where no additional test requirements are imposed on the affected system other than those which would be required following routine maintenance of that system;
(amended 2003/06/01)

(e) installation of instruments which are not interfaced with any other systems; and
(amended 2003/06/01)

(f) replacement of an avionics LRU where equivalency is maintained, and where no additional test requirements are imposed on the affected system other than those which would be required following routine maintenance of that system.
(amended 2003/06/01)

Instrument

5. Maintenance of instruments, other than display devices whose operation is integrated with an appliance to which another category of specialized maintenance applies, if the work is beyond the limits recommended in the manufacturer's maintenance manual or service instructions for service in the field, is instrument specialized maintenance.
(amended 2003/06/01)

Component

6. Any of the following types of maintenance of an appliance or component, where the work is beyond the limits recommended in the manufacturer's maintenance manual or service instructions for service in the field, is component specialized maintenance:
(amended 2003/06/01)

(a) the reassembling of valves that are activated electrically or through the use of controlled fluid pressure;

(b) the calibrating or flow checking of any fuel metering or air metering component, other than a float-type carburetor;

(c) the overhaul of any pressure-type fuel, oil, pneumatic or hydraulic pump;

(d) a repair involving the disassembly of speed-regulating devices, including an engine or propeller governor or a constant-speed drive;

(e) the overhaul of a rotor head, transmission or any mechanism used to transmit power to the rotors of a tilt-wing aircraft or helicopter;

(f) the repair of a helicopter rotor blade;

(g) the rewinding of the field coil or armature of an electrical accessory;

- (h) the overhaul of an aircraft magneto; and
 - (i) the patch repair of a bladder-type fuel tank.
- (amended 2003/06/01)

Welding

7. The welding of the following parts is welding specialized maintenance:
(amended 2003/06/01)

- (a) any part of the primary structure, including a wheel, an axle and a passenger restraint or cargo restraint system;
- (b) any part of an aircraft system, including a fuel tank, an oil tank and a pneumatic or hydraulic reservoir; and
- (c) any structural or dynamic engine part.

Non-destructive Testing (NDT)

8. Any required inspection of an aeronautical product that uses liquid penetrant, magnetic particle, radiographic, ultrasonic or eddy current methods, unless the inspection is performed under Appendix K to Standard 571 - Maintenance, is Non-Destructive Testing (NDT) Specialized Maintenance.
(amended 2003/06/01)

SCHEDULE III

(amended 2000/12/01)

*(Subsection 571.11(5))***Types of Work**

1. Application of fabric patches to aircraft skin, not involving the removal of control surfaces
2. Replacement of tires, wheels, brakes, skis, landing skids and skid shoes
3. Replenishment and charging of oleos
4. Replacement of seats, safety belts and seat harnesses
5. Repair of upholstery and cabin trim, repositioning of non-structural cabin compartment dividers and passenger service units
6. Removal and replacement of cabin doors in non-pressurized aircraft
7. Cleaning, testing and replacement of spark-plugs and igniters
8. Checking of cylinder compression
9. Draining and replenishment of oil systems
10. Cleaning and replacement of fuel, oil and air filters
11. Checking and replacement of magnetic chip detectors
12. Adjustment of generator and alternator drive belt tension
13. Replacement, charging, testing and deep cycling of batteries
14. Replacement of fuses, light-bulbs and reflectors
15. Replacement of voice communication line replaceable units designed for rapid replacement
16. Replacement of instruments and indicators that do not require calibration or adjustment after installation
17. Opening and securing of circuit breakers in accordance with an approved minimum equipment list
18. Calibration and adjustment of direct reading magnetic direction indicators
19. Leak testing of pitot-static systems
20. Disabling and locking of thrust reverser systems in accordance with an approved minimum equipment list
21. Stowage of airstairs and doors by other than normal means, in accordance with an approved minimum equipment list
22. Installation of slides, rafts and emergency equipment
23. Aircraft structural repairs that do not affect aircraft systems



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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 73 - APPROVED MAINTENANCE
ORGANIZATIONS***

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS *

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No. 3 (2005 - 1)	2005/05/31	Apr. 19/06	
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* All persons making use of this consolidation are reminded that it is not an "official" copy. The original regulations and amendments thereto, as published in Part II of the *Canada Gazette*, should be consulted for the purpose of officially interpreting and applying the regulations.

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CAR 573 - APPROVED MAINTENANCE ORGANIZATIONS

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PART V - AIRWORTHINESS

SUBPART 73 - APPROVED MAINTENANCE ORGANIZATIONS

DIVISION I - GENERAL

(amended 2005/05/31)

Application for Approval

573.01 (1) An applicant for an approved maintenance organization (AMO) certificate or for an amendment of an AMO certificate that is in effect shall make an application in the form and manner specified in Standard 573 - Approved Maintenance Organizations.
(amended 2005/05/31)

(2) An applicant referred to in subsection (1) shall submit to the Minister with the application a copy of its maintenance policy manual (MPM) required pursuant to subsection 573.10(1).

Entitlement to and Scope of Certificate

573.02 (1) The Minister shall issue to a maintenance organization that demonstrates that it meets the requirements of this Subpart an approved maintenance organization (AMO) certificate authorizing the maintenance of specified aeronautical products or the provision of specified maintenance services.

(2) The AMO certificate shall specify, in accordance with the criteria specified in section 573.02 of Standard 573 - Approved Maintenance Organizations, any category in which ratings have been issued and shall list the aeronautical products that the AMO is authorized to maintain or the maintenance services that the AMO is authorized to perform.
(amended 2005/05/31)

(3) The scope of the work that may be performed under each rating specified on the AMO certificate is determined by limitations that are set out in the certificate.

(4) Unless an expiry date is specified in an AMO certificate issued pursuant to subsection (1), the certificate remains in effect until it is surrendered, suspended or cancelled.

Duties of Certificate Holder

(amended 2005/05/31)

573.03 (1) The holder of an approved maintenance organization (AMO) certificate shall
(amended 2005/05/31)

(a) appoint a person responsible for maintenance.
(amended 2005/05/31)

(b) ensure that the person responsible for maintenance meets the requirement set out in subsection 573.04(1);
(amended 2005/05/31)

(c) subject to subsection (4), ensure that the person responsible for maintenance
(amended 2005/05/31)

(i) has achieved a grade of 70% or more in an open-book examination that demonstrates knowledge of the provisions of the *Canadian Aviation Regulations*; and

(ii) meets the experience requirement set out in subsection 573.04(1) of Standard 573 - *Approved Maintenance Organizations*;

(d) ensure that the person responsible for maintenance demonstrates to the Minister knowledge of the topics set out in subsection 573.04(2) of Standard 573 - *Approved Maintenance Organizations* within 30 days after their appointment;
(amended 2005/05/31)

(e) ensure that the person responsible for maintenance performs the duties referred to in subsections 573.04(2) and (3) and 573.09(2) and (3);
(amended 2005/05/31)

(f) provide the person responsible for maintenance with the financial and human resources necessary to ensure that the holder of the AMO certificate meets the requirements of these Regulations;
(amended 2005/05/31)

(g) ensure that corrective actions are taken in respect of any findings resulting from a quality assurance program established under subsection 573.09(1) or a safety management system referred to in section 573.30; and
(amended 2005/05/31)

(h) conduct reviews of the safety management system to determine its effectiveness;
(amended 2005/05/31)

(2) The Minister shall conduct an interview with the person appointed under paragraph (1)(a) to assess their knowledge of the topics referred to in paragraph (1)(d);
(amended 2005/05/31)

(3) The Minister shall notify the person appointed under paragraph (1)(a) of the results of the assessment and identify any deficiencies in their knowledge of the topics within ten days after the interview;
(amended 2005/05/31)

(4) The knowledge requirement set out in subparagraph (1)(c)(i) does not apply in respect of
(amended 2005/05/31)

(a) a person responsible for maintenance who held that position on January 1, 1997, or

(b) the holder of an aircraft maintenance engineer (AME) licence

(5) The experience requirement set out in paragraph 573.04(1)(a) of Standard 573.04 *Approved Maintenance Organizations* does not apply in the case of an AMO certificate in respect of which no rating in the aircraft, avionics, instrument, engine or propeller category has been issued if the accountable executive can demonstrate to the Minister by means of a risk assessment that the lesser experience is appropriate to the scope of work performed by the AMO and will not affect aviation safety or the safety of the public
(amended 2005/05/31)

(6) The holder of an AMO certificate shall ensure that no person is appointed to be responsible for maintenance or remains responsible for maintenance if, at the time of their appointment or during their tenure, they have a record of conviction for
(amended 2005/05/31)

(a) an offence under section 7.3 of the Act, or

(b) two or more offences under any of sections 571.10 and 571.11 not arising from a single occurrence

(7) The holder of a certificate referred to in subsection (1) shall ensure that the person managing the safety management system who is referred to in section 573.32 performs the duties set out in that section
(amended 2005/05/31)

Person Responsible for Maintenance

(amended 2005/05/31)

573.04 (1) The person responsible for maintenance shall, within 30 days after their appointment under paragraph 573.03(1)(a), submit to the Minister a signed statement that they accept the responsibilities of their position
(amended 2005/05/31)

(2) The person responsible for maintenance shall manage the activities of the approved maintenance organization (AMO) in accordance with the policies set out in the maintenance policy manual (MPM) established under section 573.10
(amended 2005/05/31)

(3) The person responsible for maintenance shall, where a finding resulting from a quality assurance program established under subsection 573.09(1) or a safety management system referred to in section 573.30 is reported to them
(amended 2005/05/31)

(a) determine what, if any, corrective actions are required and carry out those actions

(b) keep a record of any determination made under paragraph (a) and the reason for it

(c) if management functions have been assigned to another person under subsection (4) or (5), communicate any determination regarding a corrective action to that person; and

(d) notify the accountable executive of any systemic deficiency and of the corrective action taken.

(4) The person responsible for maintenance may assign the management functions for the entire quality assurance program established under subsection 573.09(1) or for the safety management system referred to in 573.30 to another person if
(amended 2005/05/31)

(a) that person meets the requirements set out in paragraphs 573.03(1)(c) and (d) and subsection 573.03(6); and

(b) the assignment and its scope are described in the AMO's MPM.

(5) The person responsible for maintenance may assign the management functions for specific maintenance activities to another person if the assignment and its scope are described in the AMO's MPM.
(amended 2005/05/31)

(6) The responsibility of the person responsible for maintenance is not affected by the assignment to another person of management functions under subsection (4) or (5).
(amended 2005/05/31)

Authorization to Sign a Maintenance Release

573.05 (1) No approved maintenance organization (AMO) certificate holder shall authorize a person to sign a maintenance release unless the person meets the applicable requirements of Section 571.11 and has successfully completed the training required by Section 573.06.

(2) No AMO certificate holder shall authorize a person to sign a maintenance release under paragraph 571.11(2)(c) unless the person has, in respect of the work being certified, demonstrated to the certificate holder levels of knowledge and experience that are appropriate and that meet the applicable criteria set out in section 573.05 of **Standard 573 - Approved Maintenance Organizations**.
(amended 2005/05/31)

Training Program

573.06 (1) An approved maintenance organization (AMO) certificate holder shall implement a training program to ensure that persons authorized to perform or supervise the performance of any function under this Subpart are trained in respect of the regulations, the standards and the AMO procedures applicable to that function.

(2) The program required by subsection (1) shall include initial training, updating and other training necessary, within the meaning assigned to those terms in section 573.06 of

Standard 573 - Approved Maintenance Organizations, to ensure continued qualification that is appropriate to the function to be performed or supervised.

(amended 2005/05/31)

Personnel Records

573.07 (1) An approved maintenance organization (AMO) certificate holder shall establish, maintain and retain for at least two years after an entry is made, for each affected person, a record of

(a) all personal qualifications in respect of appointments made pursuant to Section 573.03 and in respect of assignments of functions made pursuant to Section 573.04;

(b) all of the authorizations to sign a maintenance release pursuant to Section 573.05; and

(c) all of the training conducted pursuant to Section 573.06.

(2) An AMO certificate holder shall provide a copy of a record required by this Section to the person to whom the record refers on the completion of each training activity or the granting of an authorization referred to in paragraph (1)(b).

Facilities, Equipment, Standards and Procedures

573.08 (1) An approved maintenance organization (AMO) certificate holder shall provide the facilities and equipment specified in **Standard 573 - Approved Maintenance Organizations** that are necessary for the work to be performed.

(amended 2005/05/31)

(2) Except in cases provided for in a maintenance policy manual (MPM), work performed by an AMO certificate holder shall be performed in the facilities required by subsection (1), unless unforeseen circumstances do not permit the work to be performed in those facilities and the safety of the aircraft is not affected by the fact that the work is performed elsewhere.

(3) Where an AMO uses standards equivalent to those of the manufacturer of an aeronautical product for the performance of work pursuant to paragraph 571.02(1)(b), those standards shall be identified in accordance with Section 573.10.

(4) Where a task undertaken by an AMO is divided into sub-tasks, the person appointed pursuant to Section 573.03 shall establish a system of task control to ensure that all of the sub-tasks are completed prior to the signing of a maintenance release in respect of the completion of that task.

Quality Assurance Program

573.09 (1) The holder of an approved maintenance organization (AMO) certificate shall establish and maintain a quality assurance program consisting of provisions for sampling

maintenance processes to evaluate the AMO's ability to perform its maintenance in a safe manner
(amended 2005/05/31)

(2) The person responsible for maintenance shall ensure that records relating to the findings resulting from the quality assurance program are distributed to the appropriate manager for corrective action and follow-up in accordance with the policies and procedures specified in the maintenance policy manual (MPM).
(amended 2005/05/31)

(3) The person responsible for maintenance shall establish an audit system in respect of the quality assurance program that consists of the following:
(amended 2005/05/31)

(a) an initial audit within 12 months after the date on which the AMO certificate is issued;

(b) subsequent audits conducted at intervals set out in the MPM;

(c) checklists of all activities controlled by the MPM;

(d) a record of each occurrence of compliance or non-compliance with the MPM found during an audit referred to in paragraph (a) or (b);

(e) procedures for ensuring that each finding of an audit is communicated to them and, if management functions have been assigned to another person under subsection 573.04(4) or (5), to that person;

(f) follow-up procedures for ensuring that corrective actions are effective; and

(g) a system for recording the findings of initial and periodic audits, corrective actions and follow-ups.

(4) The records required under paragraph (3)(g) shall be retained for the greater of
(amended 2005/05/31)

(a) two audit cycles; and

(b) two years.

(5) The duties related to the quality assurance program that involve specific tasks or activities within an AMO's activities shall be fulfilled by persons who are not responsible for carrying out those tasks or activities
(amended 2005/05/31)

Maintenance Policy Manual

573.10 (1) An approved maintenance organization (AMO) certificate holder shall establish, maintain and authorize the use of a maintenance policy manual (MPM) that contains information to ensure the efficiency of the AMO's maintenance policies, dealing with the

subjects set out in *Standard 573 - Approved Maintenance Organizations*,
(amended 2005/05/31)

(2) The Minister may authorize the incorporation by reference in an MPM of detailed procedures manuals and lists prepared by the AMO certificate holder, dealing with the subjects set out in *Standard 573 - Approved Maintenance Organizations*, where
(amended 2005/05/31)

- (a) the policy affecting those detailed procedures and the composition of the lists is set out in the MPM;
- (b) each incorporation is clearly indicated in the MPM; and
- (c) the AMO certificate holder ensures that the incorporated procedures manuals and lists meet the requirements of this Section.

(3) Where detailed procedures manuals or lists are being incorporated by reference in an MPM, the person appointed pursuant to Section 573.03 or another person to whom that management function is assigned pursuant to Section 573.04 shall certify in writing that the incorporated documents and every amendment thereto meet the requirements of the policy established in the MPM with respect to those documents.

(4) An AMO certificate holder need not conform to the policy and procedures contained in its MPM, where the Minister has authorized the non-conformity in writing, after it has been demonstrated that such non-conformity would not affect the safety of the aeronautical product to be maintained or the maintenance service to be offered.

(5) An AMO certificate holder shall submit each page of its MPM to the Minister for approval, either individually or in accordance with a procedure that ensures compliance with the requirements of *Standard 573 - Approved Maintenance Organizations*,
(amended 2005/05/31)

(6) An AMO certificate holder shall amend its MPM when instructed to do so by the Minister, where the MPM does not

- (a) meet the requirements of this Subpart; or
- (b) contain policies or procedures that are sufficiently detailed to demonstrate that the AMO's quality assurance program meets the requirements of these Regulations.

(7) An AMO certificate holder shall take steps to ensure that a current copy of its MPM, or the portions thereof that are relevant to the task to be performed, is made available to each person who performs or certifies that task.

(8) An AMO certificate holder shall amend each copy of its MPM within 30 days after receiving an approval issued pursuant to subsection (5).

(9) The Minister shall, if the standards set out in **Standard 573 - Approved Maintenance Organizations** are met, approve an MPM and any amendments to that manual.
(amended 2005/05/31)

Maintenance Arrangements

573.11 (1) Except as provided in subsection (2), no approved maintenance organization (AMO) certificate holder shall permit an external agent to perform maintenance on its behalf unless

(a) the external agent holds an AMO certificate with a rating of a category specified pursuant to Section 573.02 that is appropriate to the type of work to be performed or the aeronautical product to be maintained;

(b) where the work is to be performed outside Canada, the external agent has been authorized to do the type of work to be performed or to perform maintenance on the type of aeronautical product to be maintained under the laws of a state that is party to an agreement with Canada and the agreement provides for the recognition of maintenance functions; or

(c) in all other cases, the performance of the maintenance by the person or organization has been approved by the Minister as being in conformity with these Regulations.

(2) Subject to subsection (4), an AMO certificate holder may permit work to be performed by an external agent other than an agent described in subsection (1) where the work is performed in accordance with an arrangement that provides for it, under the direct supervision of the person appointed pursuant to Section 573.03 or 573.04 and certified by persons authorized to do so in accordance with the approved procedures set out in the AMO's maintenance policy manual (MPM).

(3) Arrangements respecting work to be performed by external agents pursuant to subsection (2) shall be made in accordance with procedures governing maintenance arrangements set out in the MPM or, if no such procedures are set out in the MPM, shall be approved by the Minister as ensuring conformity with the requirements of this Subpart.

(4) An AMO certificate holder that requests an external agent to perform work shall

(a) where the work is to be performed pursuant to subsection (1) or (2), be responsible for specifying the tasks to be performed by the agent and ensuring completion of the work; and

(b) where the work is to be performed pursuant to subsection (2), be responsible for ensuring the conformity of that work with the requirements of Subpart 71.

(5) A maintenance arrangement that is made by a foreign air operator to have its maintenance done in Canada by a person or organization that holds an AMO certificate issued pursuant to section 573.02 shall be authorized by a maintenance specification issued to the AMO in accordance with the requirements of **Standard 573 - Approved Maintenance**

Organizations, where the air operator is from a state that
(amended 2005/05/31)

- (a) is party to an agreement with Canada that provides for recognition of the work performed and the issuance of a maintenance specification is specified in the agreement; or
- (b) is not party to an agreement with Canada that provides for recognition of the work performed and the issuance of a maintenance specification is requested by that state.

Service Difficulty Reporting

573.12 The holder of an approved maintenance organization (AMO) certificate shall report to the Minister, in accordance with Division IX of Subpart 21 of Part V, any reportable service difficulty related to an aeronautical product being maintained.
(amended 2009/12/01)

Foreign Approvals

573.13 An application submitted by a maintenance organization for the issuance or amendment of an approved maintenance organization (AMO) certificate authorizing the performance of work in facilities located outside Canada is granted if

- (a) the applicant has demonstrated that the issuance of the approval in respect of those facilities is in the public interest as provided for in subsection 6.71(1) of the Act;
- (b) the applicant has recognized by advance agreement the Minister's right to enter and inspect those facilities and seize anything found in those facilities, under the same conditions as would govern the exercise of the Minister's powers pursuant to subsection 8.7(1) of the Act if the facilities were located in Canada;
- (c) the AMO has agreed to reimburse the Minister for any expenses incurred by Department of Transport personnel in carrying out the activities provided for in paragraph (b) in respect of those facilities; and
- (d) in the case of an AMO whose facilities are located outside Canada, the Minister specifies on the AMO certificate the date on which the certificate expires.

Identification of an AMO

573.14 (1) No person, other than the holder of an approved maintenance organization (AMO) certificate issued in accordance with this Subpart, shall identify oneself as an AMO certificate holder.

(2) A person who holds an AMO certificate issued in accordance with this Subpart shall not include, in a list of approved maintenance services offered for aeronautical products, a service that is outside the scope of the person's AMO certificate.

Technical Records

573.15 An approved maintenance organization (AMO) certificate holder shall maintain records in accordance with section 573.15 of Standard 573 - *Approved Maintenance Organizations* for work performed on all aeronautical products maintained and keep those records for at least two years beginning on the date that the maintenance release was signed. (amended 2003/06/01)

573.16 to 573.29 *Reserved*
(amended 2005/05/31)

DIVISION II - SAFETY MANAGEMENT SYSTEM
(amended 2005/05/31)

Requirements

573.30 The safety management system required under section 107.02 in respect of an applicant for, or a holder of, an approved maintenance organization (AMO) certificate authorizing the holder to perform maintenance on an aircraft operated under Subpart 5 of Part VII shall
(amended 2005/05/31)

- (a) meet the requirements of Subpart 7 of Part I and section 573.31; and
- (b) be under the control of the person responsible for maintenance appointed under paragraph 573.03(1)(a).

Components of the Safety Management System

573.31 (1) The safety management system shall include, among others, the following components:
(amended 2005/05/31)

- (a) a safety management plan that includes
 - (i) a safety policy that the accountable executive has approved and communicated to all employees,
 - (ii) the roles and responsibilities of personnel assigned duties under the quality assurance program established under subsection 573.09(1) or the safety management system,
 - (iii) performance goals and a means of measuring attainment of those goals,
 - (iv) a policy for the internal reporting of a hazard, an incident or an accident, including the conditions under which immunity from disciplinary action will be granted, and
 - (v) a review of the safety management system to determine its effectiveness;
- (b) procedures for reporting a hazard, an incident or an accident to the appropriate manager;

(e) procedures for the collection of data relating to hazards, incidents and accidents;

(d) procedures for analysing data obtained under paragraph (c) and during an audit conducted under subsection 573.09(3) and for taking corrective actions;

(e) an audit system referred to in subsection 573.09(3);

(f) training requirements for the person responsible for maintenance and for personnel assigned duties under the safety management system; and

(g) procedures for making progress reports to the accountable executive at intervals determined by the accountable executive and other reports as needed in urgent cases.

(2) The components specified in subsection (1) shall be set out in the approved maintenance organization (AMO) certificate holder's maintenance policy manual (MPM) (amended 2005/05/31)

Person Managing the Safety Management System

573.32 The person managing the safety management system in respect of an approved maintenance organization (AMO) shall (amended 2005/05/31)

(a) establish and maintain a reporting system to ensure the timely collection of information related to hazards, incidents and accidents that may adversely affect safety;

(b) identify hazards and carry out risk management analyses of those hazards;

(c) investigate, analyze and identify the cause or probable cause of all hazards, incidents and accidents identified under the safety management system;

(d) establish and maintain a safety data system, by either electronic or other means, to monitor and analyze trends in hazards, incidents and accidents;

(e) monitor and evaluate the results of corrective actions with respect to hazards, incidents and accidents;

(f) monitor the concerns of the civil aviation industry in respect of safety and their perceived effect on the AMO;

(g) determine the adequacy of the training required by paragraph 573.31(1)(f); and

(h) where the person responsible for maintenance has assigned the management functions for the safety management system under subsection 573.04(4) to another person, report to the person responsible for maintenance the hazards, incidents and accidents identified under the safety management system required under section 573.30 or as a result of an audit required under paragraph 573.31(1)(e).



Transport
Canada

Transports
Canada

TP 6197 E

CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***SUBPART 91 - SERVICE DIFFICULTY REPORTING
- REPEALED
(2009/12/01)***

Canada



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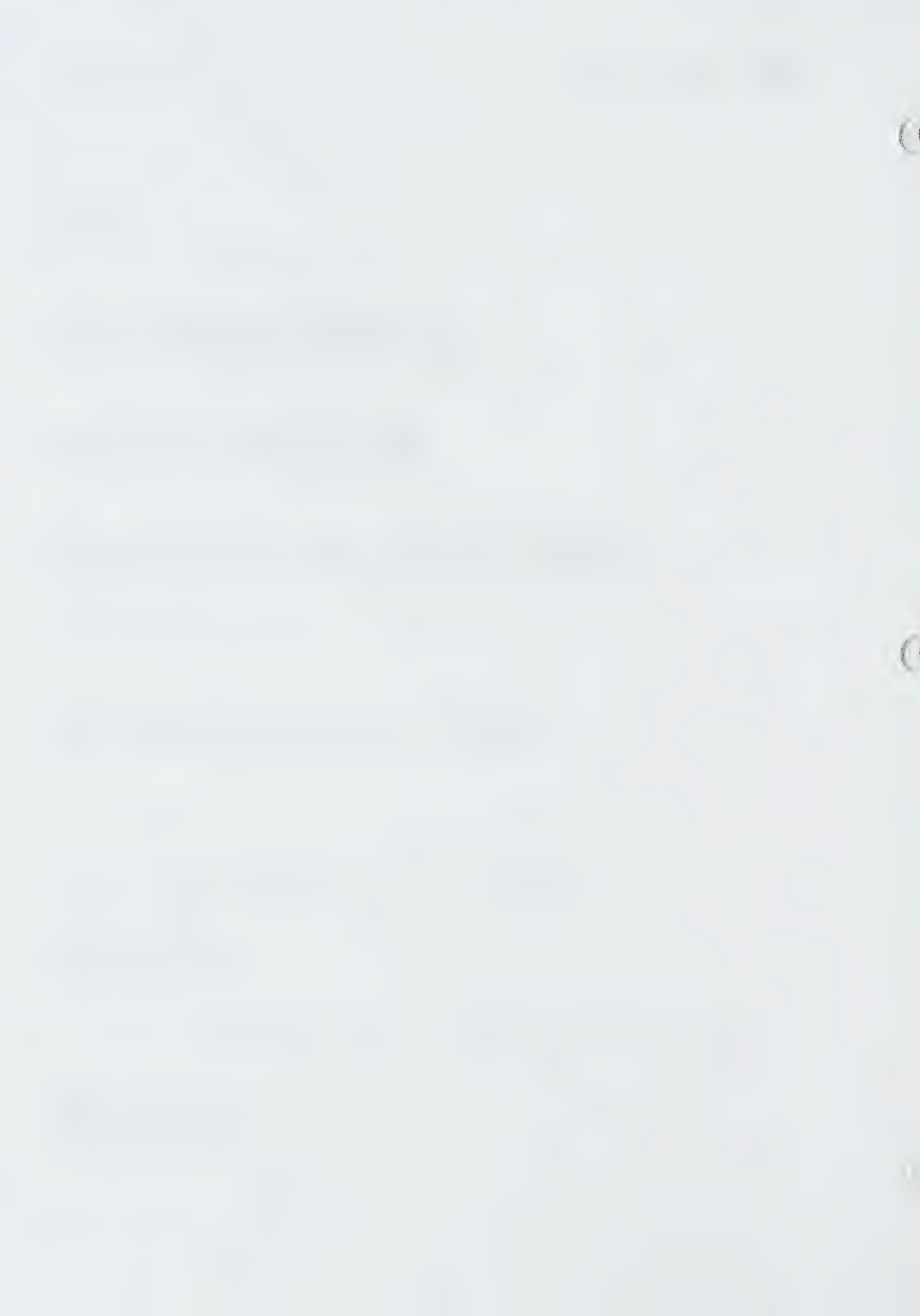
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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***CAR 593- AIRWORTHINESS DIRECTIVES
- REPEALED
(2009/12/01)***

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CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

ANNEXE - RÈGLEMENTS

CHAPTER 500 - GENERAL PROVISIONS

Canada

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

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AIRWORTHINESS MANUAL CHAPTER 500

GENERAL PROVISIONS

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Advisory Material

AMA 500/00 - Airworthiness Manual Advisory Index, as amended periodically.

Preamble

The Airworthiness Manual

The first reference to the *Airworthiness Manual* was contained in Part I of the *Canada Gazette* of January 1979, when the proposal to amend the *Air Regulations* relating to airworthiness were published. The *Air Regulations* were subsequently amended in August 1982. Section 211(1) stated that the Minister may cause to be published an *Airworthiness Manual* and an *Engineering and Inspection Manual* containing standards of airworthiness. The same revision to the *Air Regulations* also adopted by reference those U.S. *Federal Aviation Regulations* which contained the standards of airworthiness for a number of types of aeronautical products, such as aeroplanes, rotorcraft, aircraft engines and propellers. In addition, the U.S. airworthiness standards for appliances (TSOs), contained in FAA AC 20-110 were adopted, as well as the European JAR-22 for gliders and powered gliders, and ICAO Annex 16 Volume I addressing aircraft noise emissions.

Mr. Justice C. L. Dubin in Volume 2 of the report of his Commission of Inquiry on Aviation Safety recommended that an "Airworthiness Code" should be developed, containing the appropriate provisions of the *Aeronautics Act* and comprehensive regulations relating to airworthiness. The Aeronautics Act Task Force mandated to implement such recommendations reserved for airworthiness the Series V of the Canadian Code. For this reason, in publishing the *Airworthiness Manual*, the standards adopted by reference were numbered by adding a number "5" in front of the original number sections. What was envisaged as Canadian Aeronautics Code eventually developed in the present *Canadian Aviation Regulations* (CAR), which maintains the same structure. The airworthiness requirements are embodied in Part V of the CARs. The standards of airworthiness for the design of aeronautical products are and will continue to be published in the Manual, and this Manual forms part of the CAR.

Because of internal obligations and harmonization, the numbering of CAR Part V and the related standards published in the *Airworthiness Manual* do not follow the conventional numbering system of the other parts of the CARs, and the original structure of the standards of airworthiness adopted by reference is maintained intact.

Now that the entire *Airworthiness Manual* is published, the *Engineering and Inspection Manual* is superseded and serves the function of historic-reference document for past certifications. Aviation Notice A011 Edition 1 dated 31 December 1998 provides a concordance table.

Chapter 500 - General Provisions

First Edition

The definitions and the abbreviations and symbols used throughout the chapters of the *Airworthiness Manual* were initially published in Chapter 501 (1st Edition). After October 10, 1996, Chapter 501 was reissued to address the requirements for "Annual Airworthiness Information Report" (AAIR), leaving incertitude in the application of the airworthiness standards because these definitions were not covered in the *Canadian Aviation Regulations*.

As the old Chapter 501, this new chapter is based on the United States Code of Federal Regulations (CFR), Title 14, Chapter 1, Part 1, entitled "Definitions and Abbreviations". These definitions and abbreviations are updated to include FAR Amendment 1-48 dated 18 Feb. 1998 (FR). In addition, some of the definitions previously contained in Chapter 501 have been deleted, since they are now contained in the *Canadian Aviation Regulations*.

As a reminder to the user, the interpretation section includes the definitions of rated take-off augmented thrust, rated take-off power and take-off thrust which differ from the corresponding definitions of FAR Part 1. These Canadian definitions were published in Change 501-1 effective January 1, 1986 for use with the Canadian requirement of paragraph 525.1521(b)(6) as incorporated in Change 525-1 effective January 1, 1987.

Change 500-1

Published: December 1, 2009

On December 1, 2009, Part V Subpart 21 of the *Canadian Aviation Regulations* (CAR 521) came into force. CAR 521 replaces the following Regulations in Part V—Airworthiness:

Subpart 11 - Approval of the Type Design of an Aeronautical Product

Subpart 13 - Approval of Modification and Repair Designs

Subpart 16 - Aircraft Emissions

Subpart 22 - Gliders and Powered Gliders

Subpart 23 - Normal, Utility, Aerobatic and Commuter Category Aeroplanes

Subpart 25 - Transport Category Aeroplanes

Subpart 27 - Normal Category Rotorcraft

Subpart 29 - Transport Category Rotorcraft

Subpart 31 - Manned Free Balloons

Subpart 33 - Aircraft Engines

Subpart 35 - Aircraft Propellers

Subpart 37 - Aircraft Appliances and Other Aeronautical Products

Subpart 41 - Airships

Subpart 51 - Aircraft Equipment

Subpart 91 - Service Difficulty Reporting

Subpart 93 - Airworthiness Directives

In addition, with publication of CAR 521, the following Chapters of the *Airworthiness Manual* have been withdrawn:

Chapter 511 - Approval of the Type Design of an Aeronautical Product

Chapter 513 - Approval of Modification and Repair Designs

Standard 591 - Service Difficulty Reporting

Standard 593 - Airworthiness Directives

This change amends sections 500.1, 500.2 and 500.3 to reflect changes required because of the introduction of CAR 521.

As noted, the introduction of CAR 521 withdraws a number of Standards and Chapters of the AWM that are referenced in the table of section 500.01. In addition, a number of Chapters of the AWM have been renamed Standards. The table no longer reflects the same intent as when it was published and it is no longer possible to think of all of the Chapters as forming a single "Airworthiness Manual". As such the table has been deleted.

Sections 500.02 and 500.03 have been amended to reflect this change.

Change 500-2

Published: December 1, 2010

This change incorporates the following amendment to the United States Code of Federal Regulations, Title 14, Chapter I, Part 33:

FAR Amendment 33-30

Effective: May 27, 2010

Table of Change Information	
Notice of Proposed Amendment	Amended Section(s)
• 2009-120	• 500.02

This Amendment entitled "Airworthiness Standards: Aircraft Engine Standards Overtorque Limits" amends the airworthiness standards for aircraft engines to establish requirements for approval of maximum engine overtorque. Specifically, this action will add a new engine overtorque test, amend engine ratings and operating limits, and define maximum engine overtorque for certain turbopropeller and turboshaft engines. Notice of proposed amendment (NPA) 2009-120 proposes to amend section 500.02 of the *Airworthiness Manual* to introduce the new definition "maximum engine overtorque" relating to FAR amendment No. 33-30 as adopted into AWM 533.

PART V - AIRWORTHINESS

AIRWORTHINESS MANUAL CHAPTER 500 - GENERAL PROVISIONS

(2001/03/01)

500.01 *Applicability*

This Chapter contains definitions, abbreviations and symbols for use with the Standards and the Chapters of the *Airworthiness Manual* that make up Part V of the *Canadian Aviation Regulations*.

(amended 2009/12/01)

Information Note:

Background information on the *Airworthiness Manual* and its numbering system is presented in the preamble to this chapter.

(amended 2009/12/01)

500.02 *Interpretation*

The following definitions are used throughout the Standards and the Chapters of the *Airworthiness Manual* that make up Part V of the *Canadian Aviation Regulations*. They are in addition to those contained in the *Aeronautics Act* and the *Canadian Aviation Regulations*:

(amended 2009/12/01)

“aerodynamic coefficient” means nondimensional coefficient for aerodynamic forces and moments; (*coefficient aérodynamique*)

“aircraft engine” means an engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances and accessories necessary for its functioning but does not include propellers; (*moteur d’aéronef*)

“airframe” means the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls; (*cellule*)

“altitude engine” means a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude; (*moteur suralimenté*)

“autorotation” means a rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion; (*autorotation*)

“auxiliary rotor” means a rotor that serves either to counteract the effect of the main rotor torque on a rotorcraft or to maneuver the rotorcraft about one or more of its three principal axes; (*rotor auxiliaire*)

“brake horsepower” means the power delivered at the propeller shaft (main drive or main output) of an aircraft engine; (*puissance au frein*)

“calibrated airspeed” means indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level; (*vitesse conventionnelle*)

“canard” means the forward wing of a canard configuration and may be a fixed, movable, or variable geometry surface, with or without control surfaces; (*canard*)

“canard configuration” means a configuration in which the span of the forward wing is substantially less than that of the main wing; (*configuration canard*)

“category A” with respect to normal and transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in Chapter 527 or 529 and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure; (*catégorie A*)

“category B” with respect to transport category rotorcraft, means single-engine or multiengine rotorcraft which do not fully meet all Category A standards. Category B rotorcraft have no guaranteed stay-up ability in the event of engine failure and unscheduled landing is assumed; (*catégorie B*)

“critical altitude” means the maximum altitude at which, in standard atmosphere, it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:

- (1) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude;
- (2) The maximum continuous rated manifold pressure, in the case of engines, the maximum continuous power of which is governed by a constant manifold pressure; (*altitude critique*)

“equivalent airspeed” means the calibrated airspeed of an aircraft corrected for adiabatic compressible flow for the particular altitude. Equivalent airspeed is equal to calibrated airspeed in standard atmosphere at sea level; (*équivalent de vitesse-air*)

“extended over-water operations” means

- (1) With respect to aircraft other than helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline; and
- (2) With respect to helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure; (*survol prolongé d'un plan d'eau*)

“external load” means a load that is carried, or extends outside of the aircraft fuselage; (*charge externe*)

“external-load attaching” means means the structural components used to attach an external load to an aircraft, including external-load containers, the back-up structure at the attachment points, and any quick-release device used to jettison the external load; (*moyens de fixation d'une charge extérieure*)

“final take-off speed” means the speed of the aeroplane that exists at the end of the take-off path in the en route configuration with one engine inoperative (*vitesse au décollage*) (amended 2003/11/10)

“fireproof” means

- (1) with respect to materials and parts used to confine fire in a designated fire zone, the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the heat produced when there is a severe fire of extended duration in that zone; and
- (2) with respect to other materials and parts, the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used; (*à l'épreuve du feu*)

“fire resistant” means

- (1) with respect to sheet or structural members, the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and
- (2) with respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant controls, the capacity to perform the intended functions under the heat and other conditions likely to occur when there is fire at the place concerned; (*résistant au feu*)

“flame resistant” means not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed; (*résistant à la flamme*)

“flammable” with respect to a fluid or gas, means susceptible to igniting readily or to exploding; (*inflammable*)

“flap extended speed” means the highest speed permissible with flaps in a prescribed extended position; (*vitesse volets sortis*)

“flash resistant” means not susceptible to burning violently when ignited; (*non fusant*)

“forward wing” means a forward lifting surface of a canard configuration or tandem-wing configuration aeroplane. The surface may be a fixed, movable, or variable geometry surface, with or without control surfaces; (*aile avant*)

“go-around power or thrust setting” means the maximum allowable in-flight power or thrust setting identified in the performance data (*Régime de remise des gaz ou réglage de poussée*)

“idle thrust” means the jet thrust obtained with the engine power control level set at the stop for the least thrust position at which it can be placed; (*poussée au ralenti*)

“indicated airspeed” means the speed of an aircraft as shown on its pilot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible flow at sea level uncorrected for airspeed system errors; (*vitesse indiquée*)

“landing gear extended speed” means the maximum speed at which an aircraft can be safely flown with the landing gear extended; (*vitesse train d'atterrissage sorti*)

“landing gear operating speed” means the maximum speed at which the landing gear can be safely extended or retracted; (*vitesse train d'atterrissage en manoeuvre*)

“load factor” means the ratio of a specified load to the total weight of the aircraft. The specified load is expressed in terms of any of the following:
aerodynamic forces, inertia forces, or ground or water reactions; (*facteur de charge*)

“mach number” means the ratio of true airspeed to the speed of sound; (*nombre de mach*)

“main rotor” means the rotor that supplies the principal lift to a rotorcraft; (*rotor principal*)

“manifold pressure” means absolute pressure as measured at the appropriate point in the induction system and usually expressed in inches of mercury; (*pression d'admission*)

“maximum engine overtorque”, as it applies to turbopropeller and turboshaft engines incorporating free power turbines for all ratings except one engine inoperative (OEI) ratings of two minutes or less, means the maximum torque of the free power turbine rotor assembly, the inadvertent occurrence of which, for periods of up to 20 seconds, will not require rejection of the engine from service or any maintenance action other than to correct the cause. (*surcouple maximal du moteur*)
(amended 2010/05/27)

“maximum speed for stability characteristics (V_{FC}/M_{FC})” means a speed that may not be less than a speed midway between maximum operating limit speed (V_{MO}/M_{MO}) and demonstrated flight diving speed (V_{DF}/M_{DF}), except that, for altitudes where the Mach number is the limiting factor, M_{FC} need not exceed the Mach number at which effective speed warning occurs; (*vitesse maximale pour la démonstration des caractéristiques de stabilité V_{FC}/M_{FC}*)

“pitch setting” means the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller; (*calage de pas*)

“rated continuous OEI power” means, with respect to rotorcraft turbine engines, the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Chapter 533 of the *Airworthiness Manual*, and limited in use to the time required to complete the flight after the failure or shutdown of one engine of a multiengine rotorcraft; (*puissance nominale continue avec un moteur en panne (OEI)*)
(amended 2010/01/29)

“rated maximum continuous augmented thrust” means, with respect to turbojet engine type certification, the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Chapter 533 of the *Airworthiness Manual*, and approved for unrestricted periods of use; (*poussée nominale continue maximale augmentée*)

“rated maximum continuous power” means, with respect to reciprocating, turbopropeller, and turboshaft engine, the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under Chapter 533 of the *Airworthiness Manual*, and approved for unrestricted periods of use; (*puissance nominale maximale continue*)

“rated maximum continuous thrust”, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Chapter 533 of the *Airworthiness Manual*, and approved for unrestricted periods of use; (*poussée nominale maximale continue*)

“rated take-off augmented thrust” means, with respect to turbojet engine type certification, the approved jet thrust that is developed statically under standard sea level conditions, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Chapter 533 of the *Airworthiness Manual*, and limited in use to periods of not over 5 minutes for take-off operation or periods of not more than 10 minutes of one-engine-inoperative climb; (*poussée nominale augmentée au décollage*)

“rated take-off power” means, with respect to reciprocating, turbopropeller, and turboshaft engine type certification, the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under Chapter 533 of the *Airworthiness Manual*, and limited in use to periods of not over 5 minutes for take-off operation or periods of not more than 10 minutes of one-engine-inoperative climb; (*puissance nominale au décollage*)

“rated take-off thrust” means, with respect to turbojet engine type certification, the approved jet thrust that is developed statically under standard sea level conditions, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Chapter 533 of the *Airworthiness Manual*, and limited in use to periods of not over 5 minutes for take-off operation or periods of not more than 10 minutes of one-engine-inoperative climb; (*poussée nominale au décollage*)

“rated 2-minute OEI power” means, with respect to rotorcraft turbine engines, the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Chapter 533 of the *Airworthiness Manual*, for continuation of one-flight operation after the failure of one engine in multiengine rotorcraft, for up to three periods of use no longer than 2 minutes each in any one flight, and followed by mandatory inspection and prescribed maintenance action; (*puissance nominale 2-minutes OEI*)
(amended 2010/01/29)

“rated 2½-minute OEI power” means, with respect to rotorcraft turbine engines, the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Chapter 533 of the *Airworthiness Manual*, for periods of use no longer than 2 ½ minutes after the failure or shutdown of one engine of a multiengine rotorcraft; (*puissance nominale 2½ minutes OEI*)
(amended 2010/01/29)

“rated 30-minutes OEI power” means, with respect to rotorcraft turbine engines, the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Chapter 533 of the *Airworthiness Manual*, and limited to one period of use no longer than 30 minutes after the failure or shutdown of one engine of a multi-engine rotorcraft; (*puissance nominale 30 minutes OEI*)
(amended 2010/01/29)

“rated 30-second OEI power” means, with respect to rotorcraft turbine engines, the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Chapter 533 of the

Airworthiness Manual, for continuation of one-flight operation after the failure or shutdown of one engine in multiengine rotorcraft, for up to three periods of use no longer than 30 seconds each in any one flight, and followed by mandatory inspection and prescribed maintenance action; (*puissance nominale 30 secondes OEI*)
(amended 2010/01/29)

“reference landing speed” means the speed of the aeroplane, in a specified landing configuration, at the point where it descends through the 50 foot height in the determination of the landing distance (*vitesse de référence à l’atterrissage*)
(amended 2003/11/10)

“rotorcraft” means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors: (*giravion*)

“rotorcraft-load combination”

Information Note:

Refer to CAR 101.01 definition of “Helicopter Class A, Class B, Class C, and Class D external loads”; (*combinaison giravion-charge*)

“sea level engine” means a reciprocating aircraft engine having a rated take-off power that is producible only at sea level; (*moteur atmosphérique*)

“standard atmosphere” means the atmosphere defined in U.S. Standard Atmosphere, 1962 (Geopotential altitude tables); (*atmosphere type*)

“take-off power” means

- (1) with respect to reciprocating engines, means the brake horsepower that is developed under standard sea level conditions, and the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for the normal take-off, and limited in continuous use to the period of time shown in the approved engine specification; and
- (2) with respect to turbine engines, means the brake horsepower that is developed under static conditions at a specified altitude and atmospheric temperature, and under the maximum conditions of rotor shaft rotational speed and gas temperature to the period of time shown in the approved engine specification; (*puissance au décollage*)

“take-off thrust” with respect to turbine engines, means the jet thrust that is developed under static conditions at a specific altitude and atmospheric temperature under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal take-off, and limited in continuous use to the period of time shown in the approved engine specification; (*poussée au décollage*)

“tandem wing configuration” means a configuration having two wings of similar span, mounted in tandem; (*configuration à ailes en tandem*)

“true airspeed” means the airspeed of an aircraft relative to undisturbed air. True airspeed is equal to equivalent airspeed multiplied by $(\rho/\rho)^{1/2}$; (*vitesse vraie*)

“winglet” or “tip fin” means an out-of-plane surface extending from a lifting surface. The surface may or may not have control surfaces. (*aillette ou plan d’extrémité d’aile*)

500.03 Abbreviations and Symbols

The following abbreviations and symbols are used throughout the Standards and the Chapters of the *Airworthiness Manual* that make up Part V of the *Canadian Aviation Regulations*. They are in addition to those contained in the *Aeronautics Act* and the *Canadian Aviation Regulations*:
(amended 2009/12/01)

"AIR"	means Airworthiness Inspection Representative; (RIN)
"CAS"	means calibrated airspeed; (CAS)
"DOT"	means Department of Transport; (MdT)
"EAS"	means equivalent airspeed; (EAS)
"FAA"	means Federal Aviation Administration; (FAA)
"FSR"	means Field Service Representative; (FSR)
"GS"	means glide slope; (GS)
"IAS"	means indicated airspeed; (IAS)
"ICAO"	means International Civil Aviation Organization; (OACI)
"ILS"	means instrument landing system; (ILS)
"LOC"	means ILS localizer; (LOC)
"M"	means mach number; (M)
"MSL"	means mean sea level; (MSL)
"MRB"	means 1. Material Review Board; (MRB) 2. Maintenance Review Board; (MRB)
"OEI"	means one engine inoperative; (OEI)
"TAS"	means true airspeed; (TAS)
"V _A "	means design manoeuvring speed; (V _A)
"V _B "	means design speed for maximum gust intensity; (V _B)
"V _C "	means design cruising speed; (V _C)
"V _D "	means design diving speed; (V _D)
"V _{DF} /M _{DF} "	means demonstrated flight diving speed; (V _{DF} /M _{DF})
"V _{EF} "	means the speed at which the critical engine is assumed to fail during take-off (V _{EF})
"V _F "	means design flap speed; (V _F)
"V _{FC} /M _{FC} "	means maximum speed for stability characteristics; (V _{FC} /M _{FC})
"V _{FE} "	means maximum flap extended speed; (V _{FE})

"V _{FTO} "	means final take-off speed; (V _{FTO}) (amended 2003/11/10)
"V _H "	means maximum speed in level flight with maximum continuous power; (V _H)
"V _{LE} "	means maximum landing gear extended speed; (V _{LE})
"V _{LO} "	means maximum landing gear operating speed; (V _{LO})
"V _{LOF} "	means lift-off speed; (V _{LOF})
"V _{MC} "	means minimum control speed with the critical engine inoperative; (V _{MC})
"V _{MO} /M _{MO} "	means maximum operating limit speed; (V _{MO} /M _{MO})
"V _{MU} "	means minimum unstick speed; (V _{MU})
"V _{NE} "	means never-exceed speed; (V _{NE})
"V _{NO} "	means maximum structural cruising speed; (V _{NO})
"V _R "	means rotation speed; (V _R)
"V _{REF} "	means reference landing speed; (V _{REF}) (amended 2003/11/10)
"V _S "	means the stalling speed or the minimum steady flight speed at which the aeroplane is controllable; (V _S)
"V _{SO} "	means the stalling speed or the minimum steady flight speed in the landing configuration; (V _{SO})
"V _{S1} "	means the stalling speed or the minimum steady flight speed obtained in a specified configuration; (V _{S1})
"V _{SR} "	means reference stall speed; (V _{SR}) (amended 2003/11/10)
"V _{SR0} "	means reference stall speed in the landing configuration; (V _{SR0}) (amended 2003/11/10)
"V _{SR1} "	means reference stall speed in a specific configuration; (V _{SR1}) (amended 2003/11/10)
"V _{SW} "	means speed at which onset of natural or artificial stall warning occurs; (V _{SW}) (amended 2003/11/10)
"V _X "	means speed for best angle of climb; (V _X)
"V _Y "	means speed for best rate of climb; (V _Y)

" V_1 "	means the maximum speed in the take-off at which the pilot must take the first action (e.g., apply brakes, reduce thrust, deploy speed brakes) to stop the aeroplane within the accelerate-stop distance. V_1 also means the minimum speed in the take-off, following a failure of the critical engine at V_{EF} at which the pilot can continue the take-off and achieve the required height above the take-off surface within the take-off distance. (V_1)
" V_2 "	means take-off safety speed; (V_2)
" $V_{2\ min}$ "	means minimum take-off safety speed; ($V_{2\ min}$)
" V_{RA} "	means allowable rough-air speed; (V_{RA})
" V_T "	means maximum aero-tow speed (522 only); (V_T)
" V_W "	means maximum winch-launch speed (522 only). (V_W)



Transport
Canada

Transports
Canada

CARS

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

AIRWORTHINESS MANUAL CHAPTER 501 - ANNUAL AIRWORTHINESS INFORMATION REPORT

Canada

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

[illegible]

**AIRWORTHINESS MANUAL CHAPTER 501
ANNUAL AIRWORTHINESS INFORMATION
REPORT**

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Preamble

Second Edition

Effective: October 10, 1996

The first edition of Chapter 501 is effectively amendment 501-8. However, in line with the *Canadian Aviation Regulations*, with the exception of the terms and definitions which are now addressed in the CARs Part I, its content has been moved to Subpart 500 of the *Canadian Aviation Regulations*, and Chapter 500 of the *Airworthiness Manual* which will be published shortly.

The new version of Chapter 501 sets out the standards and procedures in regard to the submission of the Annual Airworthiness Information Report. Its content comes from Subchapter 507F and AMA 507F/1.

AIRWORTHINESS MANUAL

CHAPTER 501 - ANNUAL AIRWORTHINESS INFORMATION REPORT

Requirement to Report

501.01 (1) Unless a consolidated fleet report is used as provided for in subsection (2), or unless an aircraft is out of service as provided for in subsection (3), an Annual Airworthiness Information Report shall be submitted on form # 24-0059. As required by 501.02 of the *Canadian Aviation Regulations* the report shall include either additions of new information or corrections to any current Transport Canada (TC) information which may be pre-printed on the form. The report shall be submitted to the appropriate Transport Canada regional office not later than the due date. Details of the form and completion instructions are contained in Appendix A.

Information Note:

A computer generated copy of form #24-0059, pre-printed with current Transport Canada information about the aircraft, is normally mailed to the last known address of the registered owner several weeks in advance of the due date, which is printed on the form. It is therefore the owner's responsibility to ensure TC is advised of any address change.

(2)

(a) The owner of two or more aircraft can request approval to submit a single consolidated fleet report for some, or all, of his/her aircraft in lieu of submitting individual reports in respect of each of those aircraft.

(b) The application is to be made to the Regional Director, Airworthiness of the Transport Canada region in which the aircraft are registered, who will agree to the use of a consolidated report.

(c) Consolidated fleet reports are to be submitted in an approved form and manner not later than on the approved due date, and shall contain information for each individual aircraft in the fleet. The approved due date for the consolidated report will be the date requested by the applicant, provided that date is mutually agreed to in accordance with 501.03 of the *Canadian Aviation Regulations*.

Information Note:

The owner will not be sent a reminder that a consolidated fleet report is coming due.

(3)

(a) Except as provided in (c), the owner of an aircraft that is out of service for one or more reporting periods is relieved from the obligation to submit a report for those reporting periods provided the appropriate section of form 24-0059 has been completed indicating, in the space provided, the approximate date that the aircraft is expected to return to service.

Information Notes:

(i) *Transport Canada will not send another pre-printed 24-0059 form to the owner until several weeks in advance of the next due date following the date that the owner has indicated that the aircraft will return to service.*

(ii) *Each reporting period is one complete calendar year.*

(b) Notification that an aircraft is being returned to service following relief from one or more reporting periods is to be submitted, in writing, to the Regional Director, Airworthiness of the Transport Canada region in which the aircraft is registered.

Information Note:

Relief from the reporting requirements detailed in paragraph 501.01(3)(a) of this chapter does not relieve the owner from the obligation to notify the Minister forthwith, when the aircraft is brought back into service, whether before, after, or on the date previously forecast.

(c) The status of any out of service aircraft shall be indicated on the applicable consolidated fleet report.

Reportable Information

501.02 (1) Pursuant to CAR 501.02 requirements, the following information shall be provided in the Annual Airworthiness Information Report:
(amended 2002/03/01)

(a) Aircraft nationality and registration marks*;

(b) Aircraft total hours flown since new, and aircraft hours flown in the last calendar year;

(c) Except for an aircraft being operated pursuant to Part IV or Part VII of the *Canadian Aviation Regulations* the date of the most recent annual or equivalent inspection, and:

(i) the name and licence number of the Aircraft Maintenance Engineer (AME) who conducted and certified the inspection;
(amended 2002/03/01)

(ii) in the case where it was an Approved Maintenance Organization (AMO) which conducted the inspection, the name and approval number of the AMO; or

(iii) in the case of an aircraft that is operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, the name of the owner if it was the owner who conducted the inspection;
(amended 2002/03/01)

(d) Whether the aircraft was significantly damaged since the last report and, if applicable, the date of repair certification;

(e) Applicable Type Certificate number *;

Information Note:

Prior to the introduction of the Canadian Aviation Regulations, Transport Canada had shown the approval of a type design by the issue of a Type Approval. Where no Type Certificate has been issued, the previous Canadian Type Approval number, or in some cases the FAA Type Certificate number, is to be inserted into this area.

- (f) Aircraft base of operation *;*
- (g) Transport Canada region in which the aircraft is registered *;*
- (h) Type of flight authority *;*
- (i) Aircraft purpose (i.e. private, commercial or state) *;*
- (j) Aircraft make, model and serial number *;*
- (k) Aircraft empty weight and maximum certified take-off weight *;*
- (l) Engine(s), make, model and serial number(s), if applicable *;*
- (m) Propeller(s), make, model and serial number(s), if applicable *;*
- (n) Skis, make and model, if applicable *;*
- (o) Floats, make and model, if applicable *; and,*
- (p) Certification, by the date and signature of the registered owner, that the reported information is correct.*

Information Notes:

- (i) Current Transport Canada information for the items marked * will be pre-printed on form 24-0059, for checking and correction in the boxes provided.*
- (ii) Total hours flown since new shall be current up to the reporting date; hours flown in the last calendar year refers to the period January 1 to December 31 of the year prior to the due date of the report (identified as "Reporting Period" on form 24-0059).*

(2) An Air Operator or Flight Training Unit can choose to include a combined report of the total hours flown during training, or other aerial work activities, for the last calendar year.

Information Note:

This optional data is collected for statistical purposes only.

Reporting Schedule

501.03 (1) Where the owner of an aircraft requests an alternate reporting due date, a request shall be submitted in writing to the Regional Director, Airworthiness of the Transport Canada region in which the aircraft is registered.

(2) Where the Minister requests the owner of an aircraft to consider an alternate due date, the Regional Director, Airworthiness of the Transport Canada region in which the aircraft is registered will, in writing, make the request of the aircraft owner.

Information Note:

To more evenly distribute the due dates of Annual Airworthiness Information Reports throughout the calendar year, the Regional Director, Airworthiness may assign a different report due date, subject to the owner's concurrence.

(3) Where both the aircraft owner and the Regional Director, Airworthiness, of the Transport Canada region in which the aircraft is registered can agree to a new reporting date, the new date will be granted in accordance with the provisions of 501.03 of the *Canadian Aviation Regulations*.

Appendix A - Annual Airworthiness Information Report (Form #24-0059) Sample

Transport
CanadaTransports
CanadaANNUAL AIRWORTHINESS
INFORMATION REPORTRAPPORT ANNUEL D'INFORMATION
SUR LA NAVIGABILITÉ AÉRIENNE

Print / Imprimer

Web AAR access code - Code d'accès RAANA (Web)

Issued - Émission (yyyy-mm-dd/aaaa-mm-jj)	Due - Échéance (yyyy-mm-dd/aaaa-mm-jj)
Registration mark - Immatriculation	Type certificate - Certificat de type
Flight authority - Autorité de vol	Type of registration - Type d'immatriculation

Aircraft base - Base d'exploitation	
Country - Pays	Province/State - Province/État
Municipality - Municipalité	Airport - Aéroport
Other (home, farm, etc.) Autre (résidence, ferme, etc.)	TC region - Région de TC

Reporting period for hours flown last calendar year Période du rapport des heures de vol, dernière année civile	
Total hours flown since new - to the present Heures de vol depuis la mise en service jusqu'à présent	Hours flown last calendar year Heures de vol, dernière année civile
h	h
Optional for air operators & flight training units Permetteff pour exploitantes aériennes et unités de formation au pilotage Specialty hours - Heures d'opérations spécialisées Training - Formation	Autres activités de travail aérien
h	h

COMPLETE FORM AND SUBMIT NOT
LATER THAN THE DUE DATE
REMPLIR ET PRÉSENTER LE FORMULAIRE AU
PLUS TARD À LA DATE D'ÉCHÉANCE
VOIR AU VERSO POUR LES
DÉTAILS DES INSTRUCTIONS

Date of the most recent annual or 100-hour inspection (yyyy-mm-dd) Date de la plus récente inspection annuelle aux 100 h (aaaa-mm-jj)	ASPC/AMEC or owner who/which conducted & certified this inspection L'OMIA, le TEA ou le propriétaire qui a effectué et certifié cette inspection
Name - Nom	Number - Numéro
<input type="checkbox"/> AMO - CMA <input type="checkbox"/> AME - TEA Owner - Propriétaire	Date of damage (yyyy-mm-dd) Date des dommages (aaaa-mm-jj)
Was the aircraft last damaged since last report? L'aéronef a-t-il été endommagé depuis le dernier rapport?	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of repair/certification (yyyy-mm-dd) Date d'achèvement des réparations (aaaa-mm-jj)	
Optional - Facultatif Emergency AD fax number (See instructions) N° de télécopieur pour CH d'urgence (voir instructions) E-Mail address Adresse de courriel	

Aircraft make - Constructeur de l'aéronef
Aircraft model - Modèle de l'aéronef
Aircraft serial number - N° de série de l'aéronef

Empty weight Masse à vide	Last changed - Dernière mise à jour	Max. permissible take-off weight Masse maximale admissible au décollage
h	h	h
With landing gear configuration Avec quel train d'atterrissage?	With landing gear configuration Avec quel train d'atterrissage?	With landing gear configuration Avec quel train d'atterrissage?
<input type="checkbox"/> Wheels <input type="checkbox"/> Piste <input type="checkbox"/> Stee Route <input type="checkbox"/> Piste <input type="checkbox"/> Stee	<input type="checkbox"/> Wheels <input type="checkbox"/> Piste <input type="checkbox"/> Stee Route <input type="checkbox"/> Piste <input type="checkbox"/> Stee	<input type="checkbox"/> Wheels <input type="checkbox"/> Piste <input type="checkbox"/> Stee Route <input type="checkbox"/> Piste <input type="checkbox"/> Stee
Date (yyyy-mm-dd / aaaa-mm-jj)	Date (yyyy-mm-dd / aaaa-mm-jj)	

Engine make - Constructeur du moteur	Engine model - Modèle du moteur	Engine serial no. - N° de série du moteur
1	2	3
3	4	5
6	7	8

Propeller make - Constructeur de l'hélice	Prop. serial no. - N° de série de l'hélice
1	2
3	4
5	6

Sk manufacturer - Fabricant de skis	Sk model - Modèle de skis	Foat manufacturer - Fabricant de flotteur	Foat model - Modèle de flotteur
1	2	3	4
5	6	7	8
9	10	11	12

Owner remarks - Remarques du propriétaire	<p>AIRCRAFT OUT OF SERVICE - AÉRONEF HORS SERVICE (see instructions and complete only if applicable) (voir les instructions et remplir seulement s'il y a lieu)</p> <p><input type="checkbox"/> The aircraft will be out of service for all of the current calendar year L'aéronef sera hors service pendant toute l'année civile en cours</p> <p>Estimated date of return to service Date prévue de remise en service</p> <p>Reason aircraft is out of service (optional) Raison pour laquelle l'aéronef est hors service (facultatif)</p> <p>1</p>
---	---

ENSURE THAT THIS ADDRESS APPEARS IN ENVELOPE WINDOW PRIOR TO MAILING
VÉRIFIER QUE L'ADRESSE EST VISIBLE DANS LA POCHETTE DE L'ENVELOPPE AVANT DE POSTER

24-0059 (0712-04) DOT / DLC - 100 - 02546

Signature of owner or authorized agent
Signature du propriétaire ou de l'agent autorisé

Date
(yyyy-mm-dd / aaaa-mm-jj)

Canada

Completion Instructions

ANNUAL AIRWORTHINESS INFORMATION REPORT (AAIR)

Pursuant to Canadian Aviation Regulations (CARs), Part V, Subpart 1, and Chapter 501 of the *Aircraft Worthiness Information System* (CAWIS), the owner of an ultra-light aircraft shall submit to the Minister no later than the due date an Annual Airworthiness Information Report (AAIR).

HOW TO SUBMIT THE AAIR

The AAIR can be submitted in one of two ways:

1. Fill in the attached form and return it to your Transport Canada (TC) regional office, following the instructions of sections A, B, C, D and E below; or
2. Submit it electronically via the Internet, following the instructions of section F below.

A. PROVIDE DATA IN THE SPACES MARKED ▶

1. Data of the most recent annual or 100-hour inspection, and the name & number of the AIC or AIE who/which conducted and certified the inspection. In the case of an airframe built or owner maintained aircraft, the name of the owner if the owner performed the inspection.

Note: Not required for aircraft operated pursuant to CAR 10 or CAR 11.

2. Indicate (yes or no) whether the aircraft was significantly damaged since the last report. If YES, the date the aircraft was damaged and, if applicable, the date of the repair certification.
3. Aircraft total hours flown since new, to the present, and aircraft hours flown in the last calendar year (i.e. from January 1st to December 31st of the reporting period shown).

B. CORRECT ANY ERRORS...

...in the data appearing in, or missing from, the shaded areas. Enter correct data in the clear areas immediately below the item in question.

C. OPTIONAL DATA

1. Air operators and flight training units may provide a consolidated breakdown of the total training hours and the total hours flown for other airtail work activities (specialized work) in the last calendar year (see definition in A.3 above).
2. All owners are encouraged to provide, if available, a 24-hour fax/facsimile number or e-mail address to which TC can forward notification of applicable emergency airworthiness directives.

D. AIRCRAFT OUT OF SERVICE

Subject to certain conditions, an AAIR is not required for an aircraft that is out of service (not flown) for all of a complete calendar year. When applicable, an owner can claim this privilege by indicating on this form:

- (a) The aircraft will be out of service for all of the current calendar year; and
- (b) The estimated date of return to service.

Even if claiming this privilege for the current and future years, a report is still required for any calendar year in which hours are flown, e.g. the present report must be submitted if any hours were flown during the last calendar year.

Note: This non-reporting privilege is intended for owners of aircraft which will be out of service for at least one reporting period.

E. MAILING INSTRUCTIONS

1. Check that all necessary data has been supplied.
2. Sign and date the lower right-hand corner.
3. Remove and retain copy 2 for your records.
4. Re-fold the remaining copy 1 & insert into the return envelope such that the Transport Canada regional address appears in the window.
6. Add sufficient postage and ensure that the envelope is postmarked not later than the due date.

* NEW

F. INTERNET SUBMISSION INSTRUCTIONS

1. Using the AAIR Accessible Code printed on the front of this form Logon to the Continuing Airworthiness Web Information System (CAWIS) at www.tc.gc.ca (complete URL shown *online*). (Use of the AAIR Access Code is deemed to be the equivalent of your signature when submitting an AAIR via the Internet.)
2. If you own one aircraft, a web version of the AAIR form will be presented for your completion. If you own more than one aircraft, you may submit an AAIR for each aircraft for which the Due column is checked.
3. Check and update all existing data, and enter the required new data, following the guidance of sections A, B, C, D and E.
4. When all data is complete and correct, you may select "Print" to produce a hard copy for your records.
5. Select "Submit" to send your completed AAIR to Transport Canada. A pop-up window will appear to confirm that your AAIR has been successfully submitted.

FOR DEPARTMENTAL USE ONLY

Checked by Civil Aviation

CAWIS file updated

Scanned & filed on RDIMS

RAPPORT ANNUEL D'INFORMATION SUR LA NAVIGABILITÉ AÉRIENNE (RAINA)

En vertu de la sous-partie 1 de la partie V du Règlement de l'aviation canadien (RAC) et du chapitre 501 du Manuel de renseignements du propriétaire d'un aéronef canadien, autre qu'un avion ultra-léger, doit présenter au ministre un Rapport annuel d'information sur la navigabilité aérienne (RAINA) au plus tard à la date d'échéance.

COMMENT SOUMETTRE LE RAINA

Le RAINA peut être soumis de deux façons :

1. Remplir le formulaire ci-joint et le faire parvenir à votre bureau régional de Transports Canada (TC) en suivant les instructions des sections A, B, C, D et E ci-dessous.
2. **NOUVEAU** Soumettre le formulaire électroniquement par Internet en suivant les instructions de la section F ci-dessous.

A. VEUILLEZ INSCRIRE LES DONNÉES DANS LES CASES INDIQUÉES ▶

1. Date de la plus récente inspection annuelle ou aux 100 heures, et le nom et numéro de l'OMA ou du TEA qui a effectué et certifié l'inspection. Dans le cas d'un aéronef de construction amateur ou dont le maintienance est effectuée par le propriétaire, donner le nom du propriétaire si celui-ci a effectué l'inspection.

Note : Cette information n'est pas nécessaire dans le cas d'un aéronef exploité en application des parties IV ou VII du RAC.

2. Indiquer (oui ou non) des dommages importants ont été subis par l'aéronef depuis le dernier rapport. Si OUI, la date des dommages subis par l'aéronef et la date d'attestation des réparations, s'il y a lieu.
3. Heures de vol de l'aéronef depuis sa mise en service. Jusqu'à présent, et heures de vol de l'aéronef au cours de la dernière année civile (c.-à-d. du 1^{er} janvier au 31 décembre de la période visée par le rapport).

B. VEUILLEZ CORRIGER TOUTES LES ERREURS...

1. ...qui apparaissent ou les omissions dans les cases ombrées. Insérer les corrections dans l'espace libre directement au-dessous de l'article en question.

C. DONNÉES FACULTATIVES

1. Les exploitants aériens et les unités de formation du pilotage peuvent joindre un rapport de synthèse du nombre total d'heures de vol consacrées à la formation et à d'autres activités de travail aérien (travaux spécialisés) au cours de la dernière année civile (voir la définition à A.3 ci-dessus).
2. On encourage tous les propriétaires d'aéronefs à fournir un numéro de télécopieur ou une adresse électronique qui est disponible 24 heures sur 24 et auquel TC peut transmettre des consignes de navigabilité urgentes.

D. AÉROFONES HORS SERVICE

Selon certaines conditions, un RAINA n'est pas requis pour un aéronef qui est hors service (qui n'a pas été piloté) pendant toute une année civile. Si y a lieu, un propriétaire peut invoquer ce privilège en indiquant sur ce formulaire :

- a) que l'aéronef sera hors service pendant toute l'année civile en cours; et
- b) la date prévue de remise en service.

Même si le propriétaire invoque ce privilège pour l'année en cours ou les années subséquentes, un rapport est toujours nécessaire pour chaque année civile pendant laquelle l'aéronef est piloté, par exemple, s'il y a eu des heures de vol au cours de la dernière année civile, le présent rapport doit être soumis.

Note : Ce privilège de non-signalement vise uniquement les propriétaires dont les aéronefs sont ou seront hors service pendant plusieurs périodes de rapport.

E. INSTRUCTIONS CONCERNANT L'ENVOI PAR LA POSTE

1. Vérifier que toutes les données nécessaires ont été fournies.
2. Signer et dater dans le coin inférieur droit.
3. Détacher et conserver la copie 2 pour vos dossiers.
4. Rappeler l'autre copie 1 à l'insérer dans l'enveloppe de retour en valant à bien laisser paraître l'adresse du bureau régional de Transports Canada dans la fenêtre.
5. Affranchir suffisamment et poster de façon à ce que le timbre soit collé au plus tard à la date d'échéance.

* NOUVEAU

F. INSTRUCTIONS CONCERNANT LES SOUMISSIONS PAR INTERNET

1. À l'aide du code d'accès RAINA imprimé au recto de ce formulaire, accéder au système Web d'information sur le maintien de la navigabilité (SWINN) à l'adresse www.tc.gc.ca (URL complète se trouve sur *net*). L'utilisateur du code d'accès RAINA est invité à votre signature lorsque vous soumettez un RAINA par Internet.)
2. Si vous êtes propriétaire d'un seul aéronef, remplissez la version Web du formulaire RAINA qui apparaît à l'écran. Si vous êtes propriétaire de plusieurs aéronefs, vous pouvez soumettre un RAINA pour chaque aéronef qui requiert le colonne « Rapas » est cotée.
3. Vérifier et mettre à jour toutes les données existantes, puis entrer les nouvelles données requises en suivant le guide aux sections A, B, C et D ci-dessus.
4. Lorsque toutes les données sont complétées et exactes, vous pouvez cliquer sur « Imprimer » et obtenir une copie papier pour vos dossiers.
5. Cliquer sur « Soumettre » afin d'acheminer votre RAINA électroniquement à Transports Canada. Une fenêtre de type instantané apparaîtra pour vous indiquer que votre RAINA a été soumise avec succès.

À L'USAGE DU MINISTRE SEULEMENT

Vérifié par le personnel de l'Aviation civile

Dossier du SWINN mis à jour

Scanné et classé dans le SGDDI

CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

CHAPTER 505 - DELEGATION OF AUTHORITY

Canada

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

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AIRWORTHINESS MANUAL CHAPTER 505 - DELEGATION OF AUTHORITY

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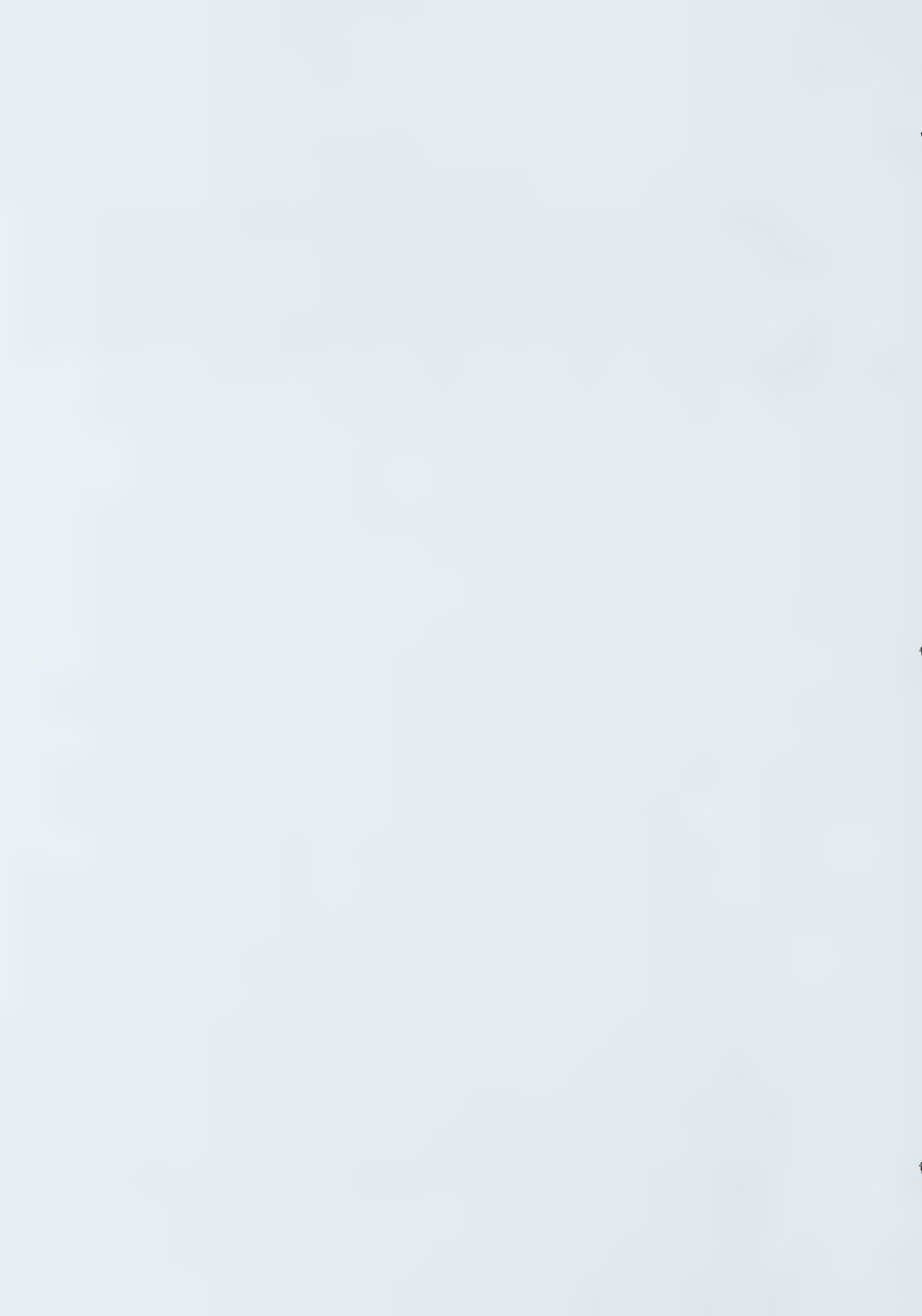
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Statutory Authority

This chapter contains procedures and conditions where, pursuant to subsection 4.3(1) of the *Aeronautics Act*, the Minister may authorize persons to act on his behalf with respect to the airworthiness of aeronautical products. Subsection 4.3(1) of the *Aeronautics Act* states that:

"The Minister may authorize members of the Royal Canadian Mounted Police or any other person to exercise or perform, subject to such restrictions or limitations as the Minister may specify, any of the powers, duties or functions of the Minister under this Part except, subject to subsection (3), any power conferred on the Minister by the Governor in Council to make regulations or orders."



Preamble

First Edition

Effective: January 1, 1986

This Chapter will form the basis for issuing delegation of authority to specific persons and organizations to perform specific functions on behalf of the Minister of Transport. Each subchapter contains information on delegation of authority for a specific purpose and the subchapter and section titles are published in the table of content. The procedures contained in this chapter will apply to all applications for delegation of authority. To provide advice and guidance for complying with the procedures, Airworthiness Manual Advisories will be issued for this chapter as they become available. Any questions related to this chapter may be addressed to the attention of the Regional Director, Airworthiness, at the nearest DOT regional airworthiness office.

Change 505-1

Effective: May 2, 1988

This change introduces Subchapter "B" entitled "Airworthiness Engineering Organization" and Subchapter "E" entitled "Design Approval Organization". The section numbers in subchapter "D" have been changed to the 300 series, because they were incorrectly numbered in the original publication.

Change 505-2

Effective: October 16, 1990

This change provides for an increase in the scope of the delegation of authority that may be given to certain Airworthiness Inspection Representatives in Subchapter 505D and related information in AMA 505D/1.

Note 1. The introduction of the original publication has been replaced by a statement of Authority and a Preamble to this chapter.

Changes are identified by brackets [], editorial alterations and typographical corrections will not be identified.

Change 505-3

Effective: June 17, 1992

This change introduces Subchapter 505F - Flight Permit Authorization and AMA 505F/1. This Subchapter provides the instruction and procedures for applying for the privilege of issuing ferry flight permits on behalf of the Minister. In addition they provide the procedures for the issue of ferry flight permits and instructions regarding the conditions and limitations which must be imposed. Changes are identified by brackets [], editorial alterations and typographical corrections will not be identified.

Change 505-4

Effective: November 30, 1993

This change introduces Subchapter 505C entitled "Design Approval Representative" and associated AMA 505C/1. The Statutory Authority is changed to reflect the current numbering of the Aeronautics Act. Changes are identified by brackets [], editorial alterations and typographical corrections will not be identified.

Change 505-5

Effective: May 1, 1996

This amendment introduces Subchapter 505H entitled "Airworthiness Inspection Representative - Amateur-Built Aircraft". In addition the word "Amendment" will henceforth replace "Change" (eg Amendment 505-5 rather than Change 505-5). Changes are identified by brackets [], editorial alterations and typographical corrections will not be identified.

Change 505-6

Published: December 1, 2009

As part of the amendments tabled to support introduction of Part V Subpart 21 of the *Canadian Aviation Regulations* (CAR 521) a Notice of Proposed Amendment had been tabled to withdraw all of Chapter 505 of the *Airworthiness Manual*. It was intended that Subchapter B – Airworthiness Engineering Organization, Subchapter C – Design Approval Representative and Subchapter E – Design Approval Organization be withdrawn and the intent becomes part of CAR 521. It was determined that the remaining Subchapters were no longer required.

Prior to the publication of CAR 521 it was decided to retain the provisions of Subchapters B, C and E, however it was determined that Subchapters D – Airworthiness Inspection Representative and Subchapter H – Airworthiness Inspection Representative Amateur-built Aircraft should be withdrawn.

This change reflects the withdrawing of Subchapters D and H.

PART V - AIRWORTHINESS
AIRWORTHINESS MANUAL CHAPTER 505 -
DELEGATION OF AUTHORITY
SUBCHAPTER A RESERVED
SUBCHAPTER B AIRWORTHINESS
ENGINEERING ORGANIZATION

505.101 General

(a) This subpart prescribes the conditions under which an applicant may obtain a delegation of authority exercised by an airworthiness engineering organization, contains the procedures for obtaining such a delegation and states the privileges and responsibilities related to a delegation of authority.

(b) For the purpose of this subchapter:

(1) "Applicant" means a corporation that has a current commercial air service operating certificate and requests a delegation of authority in accordance with this subchapter.

(2) "Delegate" means a corporation authorized pursuant to subsection 4.3(1) of the Aeronautics Act to perform functions on behalf of the Minister subject to the conditions specified in this subchapter.

(3) "Airworthiness Engineering Organization" means the group of individuals in the employ of and nominated by the applicant pursuant to subsections 505.103(c) and (d) and 505.105(e).

(4) "Design" means the preparation of drawings, processes, material specifications and reports that, in total, define modifications or repairs to an aeronautical product.

(Change 505-1 (88-02-05))

505.103 Eligibility

To obtain a delegation of authority an applicant shall:

(a) Be a corporation which has a current commercial air service operating certificate;

(b) Have an airworthiness engineering organization with an ordinary place of business in Canada;

(c) Employ persons who can determine compliance with those airworthiness requirements which are appropriate with respect to the terms of the authorization;

(d) Appoint a person whose functions include the responsibility for the airworthiness activities of the airworthiness engineering organization; and

(e) Employ adequate personnel and have resources appropriate to the functions of the airworthiness engineering organization which are within the privileges of the authorization.

(Change 505-1 (88-02-05))

505.105 Application

Each applicant for a delegation of authority exercised by the airworthiness engineering organization shall submit to the Minister an application in writing signed by an officer of the corporation. The application shall contain:

(a) The name of the applicant, the commercial air service operating certificate number and a list of the products the applicant may maintain under the operating certificate;

(b) The scope of authority for which authorization is requested;

(c) A description of the airworthiness engineering organization and associated lines of responsibility;

(d) The name and title of the person appointed to perform the function described in subsection 505.103 (d); and

(e) The names, titles, and qualifications of each person the applicant nominates to perform the functions the airworthiness engineering organization may be authorized to perform.

(Change 505-1 (88-02-05))

505.107 Engineering Procedures Manual

Each applicant shall submit to the Minister an engineering procedures manual containing:

(a) The name of the applicant and the address of the ordinary place of business of the airworthiness engineering organization;

(b) A statement of the purpose of the engineering procedures manual;

(c) A statement of commitment by the applicant to:

(1) Provide to the airworthiness engineering organization the resources required for effective performance of its duties;

(2) Grant, to the airworthiness engineering organization, the authority necessary to effectively perform the delegated functions; and

(3) Ensure that the airworthiness engineering organization staff remain knowledgeable in their technical specialty with respect to airworthiness standards and procedures.

(d) A description of the airworthiness engineering organization and associated lines of responsibility.

(e) A description of the functions which the airworthiness engineering organization is authorized to perform.

(f) A description of the airworthiness control system utilized for determining the adequacy of technical data approved by the airworthiness engineering organization.

(g) A description of the system used by the applicant for auditing the performance of the airworthiness engineering organization.

(h) A description of the record keeping system required by section 505.121.

(i) The name and title of the person appointed to perform the functions described in subsection 505.103 (d).

(j) The names, titles and specimen signatures of persons nominated pursuant to subsection 505.105 (e).

(k) A description of the procedures used to control revisions to the Engineering Procedures Manual;

(l) A "record of revisions" page which shall include the identification of each revised item, page, date and the signature of the person approving the change on behalf of the Minister; and

(m) Any other information which, in the opinion of the Minister, is necessary.

(Change 505-1 (88-02-05))

505.109 *Personnel*

(a) With respect to each person nominated pursuant to subsection 505.105(e) the applicant shall make available to the Minister a description of the individual's work experience including his current job functions and copies of any other documents that attest to the qualifications and experience of the individual.

(b) At least one person nominated pursuant to subsection 505.105(e) in each specialty must satisfy the following criteria with respect to the functions the organization is authorized to perform:

(1) Be a graduate in an engineering discipline from a recognized University or be certified or eligible for certification by a Provincial Association as a professional engineer in Canada or have knowledge and experience which, in the opinion of the Minister, is equivalent to the foregoing graduation or certification;

(2) Have, in the opinion of the Minister, a thorough knowledge gained by working experience of the applicable Canadian airworthiness and operational requirements;

(3) Have a position on the applicant's staff with authority to ensure that designs meet the applicable airworthiness requirements;

(4) Have not less than a one year working relationship, satisfactory to the Minister, with the Department of Transport Airworthiness Branch Staff in processing engineering information for the approval of an aeronautical product type design, modification design or repair design; and

(5) Have not less than six years of progressively more responsible related aeronautical engineering experience.

(c) Other personnel participating in the activities of the airworthiness engineering organization shall be selected using criteria established by the applicant and included in the Engineering Procedures Manual.

(Change 505-1 (88-02-05))

505.111 Authorization

Where an applicant complies with the conditions set out in sections 505.103; 505.105 and 505.109 and the Minister approves the Engineering Procedures Manual submitted pursuant to section 505.107 the Minister may authorize the applicant to perform functions on behalf of the Minister.

(Change 505-1 (88-02-05))

505.113 Privileges

A delegate may perform the airworthiness engineering functions set out in the approved Engineering Procedures Manual.

(Change 505-1 (88-02-05))

505.115 Limitation of Privileges

(a) No delegate may exercise any airworthiness engineering privilege other than a privilege specified in the approved Engineering Procedures Manual.

(b) No delegate may approve technical data which would authorize the establishment of or change to:

- (1) A limitation recorded in an aircraft flight manual or flight manual supplement;
- (2) A limitation applicable to an aeronautical product and recorded in the type approval or supplemental type approval for that product;
- (3) A mandatory service life applicable to any part of an aeronautical product;
- (4) A noise approval applicable to an aircraft; or,
- (5) A mandatory maintenance certification interval.

(c) No delegate may approve technical data which would authorize change to any action required for compliance with:

- (1) An airworthiness directive; or
- (2) An equivalent instruction issued under the authority of a foreign airworthiness authority.

(d) In addition to the provisions of subsection 505.115(b) other limitations of privileges may apply to each delegate as set out in the applicable Engineering Procedures Manual.

(e) The privileges of a delegate are not transferable.

(Change 505-1 (88-02-05))

505.117 Responsibilities

A delegate shall:

(a) Function in accordance with the approved Engineering Procedures Manual;

(b) Have ready access to, and make available to staff properly amended and up to date legislation, standards, advisories, and related literature appropriate to the functions the delegate is authorized to perform;

(c) Notify the Minister within 7 days of an organizational change to the airworthiness engineering organization or a change of personnel which could affect the ability of the delegate to perform the authorized functions; and

(d) Upon request, permit the Minister to inspect facilities, products and records of the organization.

(Change 505-1 (88-02-05))

505.119 Required Design Changes

Where an Airworthiness Directive is issued pursuant to Division X of Subpart 21 of Part V of the Canadian Aviation Regulations and the Airworthiness Directive relates to a design approved by the delegate, the delegate must:
(amended 2009/12/01)

(a) Where, in the opinion of the Minister, design changes are necessary to correct a condition of the product, and upon the request of the Minister, submit appropriate design changes for approval; and

(b) Upon approval of the design changes, make available the descriptive data covering the changes to all operators of products affected by the airworthiness directive.

(Change 505-1 (88-02-05))

505.121 Records

(a) Each airworthiness engineering organization shall maintain, at its ordinary place of business, current records containing for each aeronautical product for which it has developed and used design data, a technical data file that includes any data and amendments thereto including drawings, photographs, specifications, instructions and reports necessary for the approval of the design.

(b) Each airworthiness engineering organization shall have an effective system for identifying by make, model, and manufacturer's serial number those products that have been altered using design data approved by the airworthiness engineering organization.

(c) No airworthiness engineering organization shall dispose of any data file described in subsection (a) without the written approval of the Minister.

(Change 505-1 (88-02-05))

505.123 Change to Authorization

(a) The functions which a delegate is authorized to perform may be increased where:

(1) The delegate requests authorization to perform additional functions and provides to the Minister the information required by this subchapter; and

(2) In the opinion of the Minister, the airworthiness engineering organization is capable of effectively performing the additional functions.

(b) The functions which a delegate is authorized to perform may be decreased where

(1) The delegate requests a withdrawal in part of the functions the delegate is authorized to perform; or

(2) In the opinion of the Minister the airworthiness engineering organization no longer is capable of effectively performing the delegated functions.

(Change 505-1 (88-02-05))

505.125 Duration of Authorization

Each authorization granted under this subchapter is effective until:

(a) The delegate requests the withdrawal of the delegated authority;

(b) The functions, in respect of which the delegation of authority is granted, cease to be performed by the delegate;

(c) In the opinion of the Minister, the airworthiness engineering organization is not performing the functions in an effective manner; or

(d) The Minister withdraws the delegation of authority.

(Change 505-1 (88-02-05))

SUBCHAPTER C DESIGN APPROVAL REPRESENTATIVE

505.201 General

(a) This subchapter sets out the conditions under which an applicant may obtain a delegation of authority that may be exercised by a Design Approval Representative (DAR), contains the procedures for obtaining such a delegation and states the privileges and responsibilities related to a delegation of authority.

(b) For the purpose of this subchapter:

(1) "Applicant" means any person who requests a delegation of authority in accordance with this subchapter.

(2) "Approved Data" means signed statements of design compliance with pertinent regulatory requirements, including acceptance of an element contributing to such statements.

(3) "Design" means the drawings, processes, material specifications and reports that, in total, define an aeronautical product or modifications or repairs to an aeronautical product.

(4) "Design Approval Representative" (DAR) means any person authorized pursuant to subsection 4.3(1) of the Aeronautics Act to perform functions on behalf of the Minister subject to the conditions specified in this subchapter.

(c) Delegation of Authority may be granted in, but is not limited to, one or more of the following specialties:

Structures, Powerplant, Systems and Equipment, Flight Test and General.

(Change 505-4 (93-11-30))

505.203 Eligibility

To obtain a delegation of authority as a DAR an applicant shall:

(a) Be a graduate in an engineering discipline from a recognized University or be registered or eligible for registration by a Provincial Association as a professional engineer in Canada or have knowledge and experience which, in the opinion of the Minister, is equivalent to the foregoing;

(b) Have, in the opinion of the Minister, a thorough knowledge gained by working experience of the applicable Canadian airworthiness requirements in his specialty and, where required, a thorough knowledge of Canadian operational requirements;

(c) Provide a service with respect to regulatory compliance of designs for aeronautical products in Canada;

(d) Have not less than a one year working relationship, satisfactory to the Minister, with the Department of Transport Airworthiness Branch Staff, in processing engineering information for the approval of an aeronautical product design;

(e) Have not less than six years of progressively more responsible related aeronautical engineering or flight test experience;

(f) Be a Canadian citizen or a permanent resident as defined in the Immigration Act and have an ordinary place of business in Canada;

(g) In addition to 505.203 (a) through (f) the specialty of test pilot must:

(1) have a current pilot's licence;

(2) be a graduate of a recognized test pilot school or have, in the opinion of the Minister, an equivalent qualification gained through engineering test flying; and

(3) have current experience acceptable to the Minister.

(Change 505-4 (93-11-30))

505.205 Application

Each applicant for a delegation of authority shall submit to the Minister an application in writing. The application shall contain:

(a) The name of the individual who will exercise the delegation of authority and evidence of eligibility as set out in 505.203;

(b) The scope of authority for which authorization is requested, and the type of aeronautical products for which the authority may be used;

(c) A draft copy of the Engineering Procedures Manual required by 505.207; and

A compliance checklist to indicate compliance with the sections of this subchapter.

(Change 505-4 (93-11-30))

505.207 Engineering Procedures Manual (EPM)

Each applicant shall submit to the Minister an Engineering Procedures Manual containing:

(a) The name of the applicant and the address of the ordinary place of business;

(b) A statement of the purpose of the Engineering Procedures Manual;

(c) A statement by the applicant that she/he understands and accepts the responsibilities and obligations associated with the exercise of the authority delegated by the Minister.

(d) A description of the DAR's responsibilities;

(e) A description of authorized functions;

(f) A description of the system used for the control of technical data such as drawings and reports and, where the DAR works with others on an approval program, the system used for controlling the program and assigning responsibility for all constituent elements of the program;

(g) A description of the record keeping system required by 505.221;

(h) A specimen signature of the DAR identified by subsection 505.205 (a);

(i) A description of the procedures used to control revisions to the Engineering Procedures Manual;

(j) A "record of revisions" page which includes the identification of each revised item, page, date and a signature signifying approval of the change by the Minister, and

(k) Any other information which, in the opinion of the Minister, is necessary.

(Change 505-4 (93-11-30))

505.209 *Reserved*

(Change 505-4 (93-11-30))

505.211 *Authorization*

Where an applicant complies with the conditions set out in this subchapter and the Minister approves the Engineering Procedures Manual submitted pursuant to section 505.207 the applicant may be authorized by the Minister to perform the functions of a DAR. Delegation will be controlled and exercised in accordance with the procedures contained in the Engineering Procedures Manual.

(Change 505-4 (93-11-30))

505.213 *Privileges*

Subject to 505.215, a DAR may perform the airworthiness engineering functions contained in the approved Engineering Procedures Manual.

(Change 505-4 (93-11-30))

505.215 *Limitations of Privileges*

(a) A DAR may not exercise any airworthiness engineering privilege other than a privilege specified in the approved Engineering Procedures Manual.

(b) A DAR may not approve the following or changes thereto:

- (1) an aircraft flight manual or flight manual supplement;
- (2) a master minimum equipment list (MMEL) or MMEL supplement;
- (3) a limitation applicable to an aeronautical product and recorded in the type approval or supplemental type approval for that product;
- (4) a service life applicable to any life-limited part of an aeronautical product;
- (5) a mandatory maintenance certification interval; and
- (6) an airworthiness directive or an equivalent instruction issued under the authority of a foreign airworthiness authority.

(c) In addition to the provisions of this subsection other limitations of privileges may apply to each DAR as set out in the applicable Engineering Procedures Manual.

(d) The privileges of a DAR are not transferrable, and cannot be further delegated.

(Change 505-4 (93-11-30))

505.217 *Responsibilities*

A DAR shall:

(a) Function in accordance with the information contained in the approved Engineering Procedures Manual;

(b) Determine that information approved or recommended for approval:

(1) complies with applicable airworthiness standards, policies and procedures; and

(2) has been examined and found to be satisfactory with respect to the use of established analytical methods, test methods, validity of assumptions and accuracy of calculations.

(c) Make available to the Minister, on request and in a manner acceptable to the Minister, all information used in making an approval;

(d) Attend such meetings with the Department of Transport, on issues directly associated with the delegation, as the Minister may arrange;

(e) Have ready access to properly amended and up to date legislation, standards, advisories and related literature appropriate to the authorized functions;

(f) Notify the Minister within 7 days of any change of name or address of the ordinary place of business. Any other proposed change having a direct effect on the performance of authorized functions shall be subject to prior approval by the Minister before implementation; and

(g) Permit the Minister to participate in a certification test program, notwithstanding the delegated functions, where, in the opinion of the Minister, participation in the program is necessary for standardization of test techniques, rule interpretation, audit purpose or to qualify data which may form a part of approved publications such as an aircraft flight manual.

(h) Permit the Minister upon request, to inspect the records maintained in accordance with 505.221.

(Change 505-4 (93-11-30))

505.219 *Reserved*

(Change 505-4 (93-11-30))

505.221 *Records*

(a) Each DAR shall maintain, at his/her ordinary place of business, current records containing, for each aeronautical product for which design data has been approved, a technical data file that includes any data and amendments thereto including drawings photographs, specifications, instructions and reports necessary for the substantiation of the design approval.

(b) Each DAR shall record by make, model and where applicable, serial number, those products for which design data has been approved by that DAR.

(c) No person shall dispose of any data file described in subsection (a) and (b) without the written approval of the Minister.

(Change 505-4 (93-11-30))

505.223 *Change to Authorization*

(a) The functions, which a DAR is authorized to perform, may be increased where:

- (1) The DAR requests authorization to perform additional functions and provides to the Minister the information, with respect to the request, required by this subchapter; and
- (2) In the opinion of the Minister, the DAR is capable of effectively performing the additional functions.

(b) The functions which a DAR is authorized to perform may be decreased where:

- (1) The DAR requests a withdrawal, in part, of the functions the DAR is authorized to perform; or
- (2) In the opinion of the Minister, the DAR is not effectively performing the delegated functions.

(Change 505-4 (93-11-30))

505.225 *Duration of Authorization*

Each authorization granted in accordance with this subchapter is effective until:

- (a) The DAR requests the withdrawal of the delegated authority;
- (b) The function, in respect of which the delegation of authority is granted, ceases to be performed by the DAR;
- (c) In the opinion of the Minister, the DAR is not performing the functions in an effective manner; or
- (d) The Minister withdraws the delegation of authority.

(Change 505-4 (93-11-30))

SUBCHAPTER D RESERVED

(amended 2009/12/01)

SUBCHAPTER E DESIGN APPROVAL ORGANIZATION

505.401 *General*

(a) This subchapter prescribes the conditions under which an applicant may obtain a delegation of authority exercised by a design approval organization, contains the procedures for obtaining such a delegation and states the privileges and responsibilities related to a delegation of authority.

(b) For the purpose of this subchapter:

- (1) "Applicant" means a corporation that requests a delegation of authority in accordance with this subchapter.

(2) "Delegate" means a corporation authorized pursuant to subsection 4.3(1) of the Aeronautics Act to perform functions on behalf of the Minister subject to the conditions specified in this subchapter.

(3) "Design Approval Organization" means the group of individuals in the employ of and nominated by the applicant pursuant to subsections 505.403(c) and (d) and 505.405(e).

(4) "Design" means the preparation of drawings, processes, material specifications and reports that, in total, define an aeronautical product or modifications or repairs to an aeronautical product.

(Change 505-1 (88-02-05))

505.403 Eligibility

To obtain a delegation of authority an applicant shall:

(a) Be a corporation engaged in the design, modification or repair of an aeronautical product;

(b) Have a design organization with an ordinary place of business in Canada;

(c) Employ persons who can determine compliance with those airworthiness requirements which are appropriate with respect to the terms of the authorization;

(d) Appoint a person whose functions include the responsibility for the activities of the design approval organization; and

(e) Employ adequate personnel and have adequate resources appropriate to the functions of the design approval organization which are within the privileges of the authorization.

(Change 505-1 (88-02-05))

505.405 Application

Each applicant for a delegation of authority exercised by the design approval organization shall submit to the Minister an application in writing signed by an officer of the corporation. The application shall contain:

(a) The name of the applicant and a description of the aeronautical products which the applicant intends to design, modify or repair;

(b) The scope of authority for which authorization is requested;

(c) A description of the design approval organization and associated lines of responsibility;

(d) The name and title of the person appointed to perform the function described in subsection 505.403(d); and

(e) The names, titles, and qualifications of each person the applicant nominates to perform the functions the design approval organization may be authorized to perform.

(Change 505-1 (88-02-05))

505.407 Design Approval Procedures Manual

Each applicant shall submit to the Minister a Design Approval Procedures Manual which contains:

(a) The name of the applicant and the address of the ordinary place of business of the design approval organization;

(b) A statement of the purpose of the design approval procedures manual;

(c) A statement of commitment by the applicant to:

(1) Provide to the design approval organization the resources required for effective performance of its duties;

(2) Grant, to the design approval organization, the authority necessary to effectively perform the delegated functions; and

(3) Ensure that the design approval organization staff remain knowledgeable in their technical speciality with respect to airworthiness standards and procedures.

(d) A description of the design approval organization and associated lines of responsibility;

(e) A description of the functions which the design approval organization is authorized to perform;

(f) A description of the airworthiness control system utilized for determining the adequacy of technical data approved by the design approval organization;

(g) A description of the system used by the applicant for auditing the performance of the design approval organization;

(h) A description of the record keeping system required by section 505.421;

(i) The name and title of the person appointed to provide the function described in subsection 505.403(d);

(j) The names, titles, duties, responsibilities and specimen signatures of persons nominated pursuant to subsection 505.405(e);

(k) A description of the procedures used to control revisions to the Design Approval Procedures Manual;

(l) A "record of revisions" page which shall include the identification of each revised item, page, date and the signature of the person approving the change on behalf of the Minister; and

(m) Any other information which, in the opinion of the Minister, is necessary.

(Change 505-1 (88-02-05))

505.409 Personnel

(a) With respect to each person nominated pursuant to subsection 505.405(e) the applicant shall make available to the Minister a description of the individual's work experience

including his current job functions and copies of any other documents that attest to the qualifications and experience of the individual.

(b) At least one person nominated pursuant to subsection 505.405(e) in each speciality must satisfy the following criteria with respect to the functions the organization is authorized to perform:

(1) Subject to 505.409(b)(2)

(i) Be a graduate in an engineering discipline from a recognized University;

(ii) Be certified or eligible for certification by a Provincial Association as a professional engineer in Canada; or,

(iii) Have knowledge and experience which, in the opinion of the Minister, is equivalent to subparagraph 505.409(b)(1)(i) or (b)(1)(ii).

(2) Where the speciality is test pilot, be a graduate of a recognized test pilot school or have, in the opinion of the Minister, an equivalent qualification gained through engineering test flying;

(3) Have, in the opinion of the Minister, a thorough knowledge gained by working experience of the applicable Canadian airworthiness and operational requirements;

(4) Have a position on the applicant's staff with the authority to ensure that designs meet the applicable airworthiness requirements;

(5) Have not less than a one year working relationship, satisfactory to the Minister, with the Department of Transport Airworthiness Branch Staff in processing engineering information for the approval of an aeronautical product type design, modification design or repair design; and

(6) Have not less than six years of progressively more responsible related aeronautical engineering experience.

(c) Other personnel participating in the activities of the design approval organization shall be selected using criteria established by the applicant and included in the design approval procedures manual.

(Change 505-1 (88-02-05))

505.411 Authorization

When an applicant complies with the conditions set out in sections 505.403; 505.405 and 505.409 and the Minister approves the Design Approval Procedures Manual submitted pursuant to section 505.407, the Minister may authorize the applicant to perform functions on behalf of the Minister.

(Change 505-1 (88-02-05))

505.413 Privileges

A delegate may perform the design approval functions set out in the approved Design Approval Procedures Manual.

(Change 505-1 (88-02-05))

505.415 Limitation of Privileges

(a) No delegate may exercise a design approval privilege other than a privilege specified in the approved Design Approval Procedures Manual.

(b) No delegate may approve technical data which would authorize change to any action required for compliance with:

(1) An airworthiness directive; or

(2) An equivalent instruction issued under the authority of a foreign airworthiness authority.

(c) In addition to the provisions of subsection 505.415(b) other limitations of privileges may apply to each delegate as set out in the applicable Design Approval Procedures Manual.

(d) The privileges of a delegate are not transferable.

(Change 505-1 (88-02-05))

505.417 Responsibilities

A delegate shall:

(a) Function in accordance with the approved Design Approval Procedures Manual;

(b) Have ready access to, and make available to staff, properly amended and up to date legislation, standards, advisories and related literature appropriate to the functions the delegate is authorized to perform;

(c) Notify the Minister within 7 days of an organizational change to the design approval organization or a change of personnel which could affect the ability of the delegate to perform the authorized functions;

(d) Upon request, permit the Minister to inspect facilities, products and records of the organization.

(Change 505-1 (88-02-05))

505.419 Reserved

(Change 505-1 (88-02-05))

505.421 Records

(a) Each design approval organization shall maintain, at its ordinary place of business, current records containing for each aeronautical product for which it has developed and used

design data, a technical data file that includes any data and amendments thereto including drawings, photographs, specifications, instructions, and reports necessary for the approval of the design.

(b) Each design approval organization shall record by make, model, and where applicable, serial number, those products for which the design data has been approved by the design approval organization.

(c) No design approval organization shall dispose of any data file described in subsection (a) without the written approval of the Minister.

505.423 *Change to Authorization*

(a) The functions which a delegate is authorized to perform may be increased where:

(1) The delegate requests authorization to perform additional functions and provides to the Minister the information required by this subchapter; and

(2) In the opinion of the Minister, the design approval organization is capable of effectively performing the additional functions.

(b) The functions which a delegate is authorized to perform may be decreased where:

(1) The delegate requests a withdrawal in part of the functions the delegate is authorized to perform; or

(2) In the opinion of the Minister the design approval organization no longer is capable of effectively performing the delegated functions.

(Change 505-1 (88-02-05))

505.425 *Duration of Authorization*

Each authorization granted under this subchapter is effective until:

(a) The delegate requests the withdrawal of the delegated authority;

(b) The functions, in respect of which the delegation of authority is granted, cease to be performed by the delegate;

(c) In the opinion of the Minister, the design approval organization is not performing its functions in an effective manner; or

(d) The Minister withdraws the delegation of authority.

(Change 505-1 (88-02-05))

SUBCHAPTER F FLIGHT PERMIT AUTHORIZATION

505.501 *General*

(a) This subchapter stipulates the conditions under which an applicant may obtain a delegation of authority to issue a Special Purpose Flight Permit on behalf of the Minister;

establishes procedures for requesting and granting such delegation of authority; and states the responsibilities of the delegate and his employer to provide written procedures detailing how the organization will comply with the airworthiness and operational conditions and requirements, set forth in this subchapter, for the aircraft on which the delegation may be exercised. For convenience these instructions and procedures may be included in the approved company maintenance and operations manuals.

(b) For the purpose of this subchapter:

(1) "Applicant" means:

an organization that holds a current commercial air service operating certificate, issued by the Minister, requesting a delegation of authority in accordance with this subchapter.

(2) "Delegate" means:

an organization authorized pursuant to subsection 4.3(1) of the Aeronautics Act to perform functions on behalf of the Minister subject to the conditions specified in this subchapter.

(Change 505-3 (92-06-17))

505.503 Scope of Delegation

An applicant may be granted a Flight Authority Delegation to:

(1) Authorize the ferry flight of an aircraft that may not meet all applicable airworthiness requirements but that is capable of safe flight, to a base where necessary maintenance can be performed, excluding the ferry flight of a three or four engine powered aircraft with one engine inoperative; and/or

(2) Authorize the ferry flight of a three or four engine powered aircraft with one engine inoperative, to a base where necessary maintenance may be performed.

(Change 505-3 (92-06-17))

505.505 Eligibility

To obtain a delegation of authority an applicant shall:

(1) Be an organization which holds a current commercial air service operating certificate in accordance with Chapter 573 of the Airworthiness Manual;

(2) Include in its procedures manuals the airworthiness and operating conditions set forth in this subchapter;

(3) Have its ordinary place of business in Canada;

(4) Employ persons who are capable of determining compliance with those airworthiness and operational requirements which are appropriate to the terms of the delegation of authority;

(5) Appoint employees whose functions include the responsibility for authorizing ferry flights in accordance with the conditions and limitations set forth in this subchapter; and

(6) Provide the appointed employees with the appropriate authority, within the organizational hierarchy, to ensure that the conditions and limitations set forth in this subchapter or as otherwise provided by the Minister are adhered to prior to the issue of a flight permit

(Change 505-3 (92-06-17))

505.507 Personnel

(a) With respect to each person nominated pursuant to 505.505(5) the applicant shall make available to the Minister a description of the individual's work experience including his current job functions and copies of any other documents that attest to the qualifications and experience of the individual.

(b) Each person appointed shall have, in the opinion of the Minister, a thorough knowledge gained by working experience of the applicable Canadian airworthiness and operational requirements.

(c) Have not less than three years of progressively more responsible experience related to aircraft maintenance with an air carrier or an approved maintenance organization.

(Change 505-3 (92-06-17))

505.509 Application Procedure

(a) To apply for a Flight Authority Delegation a letter of application shall be submitted to the Minister. The letter shall include the name(s), position(s) and qualifications held by the nominee(s) described in subsection 505.505(5) and a list, by types, of the aircraft for which delegation authority is sought. The list shall be restricted to those aircraft types listed in the organizations operating certificate or maintenance approval.

(b) The applicant shall stipulate the scope of authority requested in accordance with section 505.503.

(c) The applicant shall include with his letter of application a copy of his written procedures or appropriate amendments to Department of Transport approved manuals incorporating the procedures, airworthiness and operating conditions and limitations set forth in this subchapter.

(Change 505-3 (92-06-17))

505.511 General Limitations

Regardless of the scope of the delegation granted, the following limitations apply:

(1) An aircraft that has been involved in a reportable aviation occurrence, other than a reportable incident, may not be moved without the express permission of the Canadian Transportation Accident Investigation & Safety Board in accordance with Transportation Safety Board Regulations.

(2) Operation of an aircraft to which an Airworthiness Directive applies shall not be authorized except in accordance with the requirements and conditions of the Airworthiness Directive.

(3) Operation of an aircraft in respect of which the Certificate of Airworthiness has been suspended or cancelled by the Minister shall not be authorized.

(4) Operation of an aircraft for experimental purposes shall not be authorized.

(5) Use as a commercial aircraft during a ferry flight is prohibited.

(6) Only crew members essential to the safe operation of the aircraft may be carried. Carriage of passengers, including non-essential crew members or any other person is prohibited.

(7) Flight over foreign territory is prohibited without the permission of the foreign air authority.

(8) Ferry of two engine powered aircraft with one engine inoperative is prohibited.

(Change 505-3 (92-06-17))

505.513 Manual Requirements - General

(a) Subsection 505.509(c) requires the applicant to submit a copy of his written procedures or amendments to approved manuals. The following paragraphs describe the requirements to be covered by these amendments.

(b) The written procedures or amendment to the applicants operations manual shall provide crews with guidance concerning:

(1) Required pre-flight, in-flight and post flight procedures;

(2) Procedures for obtaining authority for each individual ferry flight, together with the names of the officials who are authorized to grant such authority;

(3) Procedures for coordination of the take-off and control of the flight with Air Traffic Services and the Airport Manager;

(4) The responsibility of the pilot-in-command to comply with the operating conditions as laid down in the ferry flight permit at all times; and

(5) Such other information that may be considered relevant to the crew. This information must not contradict or modify the flight permit operating conditions.

(c) The written procedures or amendment to the applicants approved maintenance manual shall provide guidance concerning:

(1) Procedures relevant to the personnel who may authorize ferry flights, including the names and positions of those persons delegated such authority. These procedures should include, as a minimum:

(i) procedures to determine that the ferry flight is necessary; and

(ii) procedures to obtain operational concurrence that a ferry flight is feasible and can be carried out safely.

(2) The inspection and maintenance procedures used to prepare the aircraft for flight including any additional precautions that must be taken to ensure the safe operation of the aircraft.

(3) The procedure to certify that the aircraft is safe for its intended flight including the names and positions of the persons who may make such certification.

(4) Limitations of the type of discrepancies for which the delegate may exercise privileges.

(Change 505-3 (92-06-17))

505.515 Manual Requirements - One Engine Inoperative

(a) Where the applicant has requested a delegation of authority of a scope described in subsection 505.503 (2) the applicant shall be required to submit written instructions and procedures in addition to those required by section 505.513 regarding operations and maintenance. The following paragraphs describe the requirements to be covered by these additional requirements. This information may also be provided as amendments to the appropriate approved manuals.

(b) Operations

(1) The company flight crew training program for ferry flights with one engine inoperative;

(2) Reference to the aircraft flight manual performance data, limitations and procedures for one engine inoperative operation for each aircraft type for which the delegation is requested.

(c) Maintenance

(1) Any additional precautions, inspections or maintenance requirements required for the remaining operational engines;

(2) Any additional precautions, inspection or maintenance that may be required to prepare the inoperative engine for the ferry flight.

(Change 505-3 (92-06-17))

505.517 Authorization

Where an applicant complies with the conditions set out in sections 505.505 and 505.509 and the Minister approves the amendments to the manuals submitted pursuant to section 505.513 and/or 505.515 the Minister may authorize the applicant to perform functions on his behalf.

(Change 505-3 (92-06-17))

505.519 Conditions

(a) A Special Flight Permit issued by a delegate under this subchapter shall include such conditions relating to the equipment, maintenance and operation of the aircraft as may be specified by the Minister, and the conditions may be amended at any time by the Minister.

(b) For ferry flight authorized in accordance with subsection 505.503(1) shall include as a minimum the conditions listed in Schedule A will apply.

(c) For ferry flight authorized in accordance with subsection 505.503(2) shall include as a minimum the conditions listed in Schedule B. In addition, for the safety of the public, take-off for the purpose of a ferry flight with one engine inoperative is not allowed and will not be authorized from the runways listed in Annex 1 to Schedule B because of built-up or congested areas at the end of the runways of the listed airports.

Note:

To preclude the requirement to transmit the conditions when issuing a flight authorization by telex or Fax, copies of the conditions may be carried on board the aircraft at all times. However, the conditions do not apply until a Flight Permit has been issued in accordance with the requirements of this Subchapter.

(Change 505-3 (92-06-17))

505.521 Reporting Requirements

A copy of each ferry flight permit issued by a delegate shall be forwarded to the Minister within two business days of the ferry flight. The Minister may also specify such other information considered necessary which shall be included with each report.

(Change 505-3 (92-06-17))

505.523 Responsibilities of the Delegate

A delegate shall:

- (1) Function in accordance with the procedures contained in the approved manuals;
- (2) Have ready access to, and make available to staff properly amended and up to date legislation, standards, advisories and related literature appropriate to the function the delegate is authorized to perform;
- (3) Notify the Minister within 7 days of any organizational change to the maintenance or operational organization or a change of personnel which could affect the ability of the delegate to perform the authorized functions.

(Change 505-3 (92-06-17))

505.525 Change to Authorization

- (a) The functions which a delegate is authorized to perform may be increased where:

(1) The delegate requests authorization to perform additional functions and provides to the Minister the information required by this subchapter; and

(2) In the opinion of the Minister, the organization is capable of effectively performing the additional functions.

(b) The functions which a delegate is authorized to perform may be decreased or withdrawn where:

(1) The delegate requests a withdrawal in part of his delegated functions; or

(2) In the opinion of the Minister the organization is no longer capable of effectively performing the delegated functions.

(Change 505-3 (92-06-17))

505.527 Duration of Authorization

Each authorization granted under this subchapter will remain effective until:

(1) The delegate requests the withdrawal of the delegated authority; or

(2) The functions in respect of which the delegation of authority is granted, cease to be performed by the person delegated; or

(3) The operating certificate or maintenance organization approval is revoked or suspended by the Minister; or

(4) In the opinion of the Minister, the organization is not performing the functions in an effective manner; or

(5) The Minister withdraws the delegation of authority; or

(6) The delegate ceases to be employed by the organization under which he was authorized.

(Change 505-3 (92-06-17))

SCHEDULE A
Special Flight Permit Conditions Of Issuance
And Limitations

The following conditions apply when a Special Flight Permit has been authorized to ferry an aircraft that does not meet the applicable airworthiness requirements but is otherwise fit for flight from a place where repair or replacement may not reasonably be made to a maintenance base where repair may be made.

- (1) Before operating an aircraft that does not meet applicable airworthiness requirements, an authorized person shall make a determination that the aircraft can be safely flown to a base where maintenance can be performed. The aircraft must be inspected in accordance with the procedures contained in the approved company maintenance control manual and an appropriately licensed aircraft maintenance engineer or approved company inspector must certify, in the aircraft journey log, that the aircraft is in a safe condition for the flight.
- (2) An aircraft that has been involved in a reportable aviation occurrence, other than a reportable incident, cannot be moved without the express permission of the Canadian Transportation Accident Investigation & Safety Board in accordance with Transportation Safety Board Regulations.
- (3) Operation of an aircraft to which an Airworthiness Directive applies shall not be authorized except in accordance with the requirements of the Airworthiness Directive.
- (4) Operation of an aircraft in respect of which the Certificate of Airworthiness has been suspended or cancelled by the Minister shall not be authorized.
- (5) Operation of an aircraft for experimental purposes shall not be authorized.
- (6) Use as a commercial aircraft during a ferry flight is prohibited.
- (7) Only crew member essential for the safe operation of the aircraft may be carried. Carriage of passengers, including non-essential crew members, is prohibited.
- (8) Flight over foreign territory is prohibited without the permission of the foreign air authority.

(Change 505-3 (92-06-17))

SCHEDULE B

Operating Conditions And Limitations For One Engine Out Ferry Flight

This Special Flight Permit is valid for one engine inoperative ferry from a place where repair may not reasonably be made to a maintenance base where repair or replacement may be made, subject to the following conditions:

- (1) The company Flight Operations Manual shall contain guidance to the flight crews covering pre-flight and in-flight procedures and post-flight reporting requirements in respect of one engine inoperative ferry flights.
- (2) Within the previous twelve months, the flight crew shall have successfully completed a training program, accepted by Transport Canada, on one engine inoperative ferry flights on the aircraft type.
- (3) Only essential crew members may be carried. Carriage of passengers, including non-essential crew members, is prohibited.
- (4) The carriage of cargo of any kind, including company materials is prohibited. Ballast is permitted, as required, to maintain proper CofG and flight envelope.
- (5) The maximum gross take-off weight shall be the minimum necessary with due regard to safe reserve fuel load and centre of gravity considerations.
- (6) The pilot in command of the aircraft shall, at least one hour prior to the flight, inform the Airport Duty Manager and the Air Traffic Control Unit at the point of departure and intended landing, of the intention to ferry the aircraft with one engine inoperative and provide information on the proposed flight as may be required by those authorities to arrange for emergency equipment, special procedures etc. The flight plan shall be annotated "one engine inoperative ferry" in the remarks block.
- (7) The approved aircraft flight manual shall contain performance data and operating procedures for one engine inoperative ferry flights and the aircraft shall be operated in accordance with the performance limitations contained in the manual.
- (8) Take-off and climb to 1500 feet above ground level shall not be made over the built-up areas of any town or other settlement or over an open air assembly of persons. Annex 1 to this Appendix is a list of prohibited runways at specified airports at which it is known this condition cannot be met.
- (9) The pilot-in-command shall, prior to take-off, consider all relevant conditions and select a departure path that will not jeopardize the safety of persons or property in the event of a second engine failure after take-off.
- (10) The pilot-in-command shall inform the controlling Air Traffic Control Unit, upon each initial radio contact, of the one engine inoperative status of the aircraft.

(11) The weather at the time of departure will be at least VFR, and the weather at the intended point of landing shall be forecast to be at least VFR for the estimated time of arrival.

(12) Each flight shall be authorized in writing (telex acceptable) by the Flight Authority Delegate specified and approved in the applicable company manuals and the pilot-in-command shall carry this flight permit and conditions in the aircraft during the ferry flight.

(13) The aircraft must be prepared for ferry flight in accordance with the appropriate inspection and maintenance procedures as specified in the approved maintenance manual and the aircraft shall, prior to flight, be certified as fit for the ferry flight by a qualified approved company inspector or an aircraft maintenance engineer in the aircraft journey log in accordance with the procedure in the approved company maintenance control manual.

(14) The pilot-in-command shall acknowledge, in the aircraft journey log, that he is aware that the Certificate of Airworthiness is not in force, that he accepts the aircraft as serviceable for the ferry flight and that he is fully acquainted with the conditions of the flight permit.

(15) Flight over foreign territory is prohibited without the permission of the foreign air authority.

(16) This authority is only applicable between Canadian airports that have runways and facilities suitable for these operations.

(Change 505-3 (92-06-17))

Annex 1 To Schedule B

Take-off for the purpose of a ferry flight with one engine inoperative is not allowed under Condition No. 8 from the following runways.

Airport		Prohibited Runways
CALGARY	CYYC	16
EDMONTON MUNICIPAL	CYXD	ALL RUNWAYS
KAMLOOPS	CYKA	08
PENTICTON	CYYF	34
REGINA	CYQR	07
SASKATOON	CYXE	14
VANCOUVER	CYVR	08, 12
VICTORIA	CYYJ	02, 08, 13, 20, 31
WINNIPEG	CYWG	07, 13, 18
CHARLOTTETOWN	CYYG	21
FREDRICKTON	CYFC	15
HALIFAX/SHEARWATER	CYAW	29, 34
HAMILTON	CYHM	06
LONDON	CYXU	26
MONCTON	CYQM	29
MONTREAL/DORVAL	CYUL	ALL RUNWAYS
MONTREAL/ST.HUBERT	CYHU	24, 28
OTTAWA	CYOW	32
QUEBEC CITY	CYQB	12
ST. CATHARINES	CYSN	24
SYDNEY N.S.	CYQY	07
THUNDER BAY	CYQT	07
LESTER B. PEARSON	CYYZ	06, RIGHT 15
VAL D'OR	CYVO	36
WINDSOR	CYQG	25

(Change 505-3 (92-06-17))

SUBCHAPTER G RESERVED

(Change 505-3 (92-06-17))

SUBCHAPTER H RESERVED

(amended 2009/12/01)



Transport
Canada

Transports
Canada

CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

507 - FLIGHT AUTHORITY AND CERTIFICATE OF COMPLIANCE STANDARDS

Canada

NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

[illegible]

[illegible]

**STANDARD 507 -
FLIGHT AUTHORITY AND CERTIFICATE OF NOISE COMPLIANCE**

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PART V - AIRWORTHINESS

507 - FLIGHT AUTHORITY AND CERTIFICATE OF NOISE COMPLIANCE

(amended 2000/12/01)

507.01 *Application*

Information Notes:

(i) *Nothing in these standards, or their associated regulations, relieves the operator of a Canadian aircraft from complying with local regulations when operating outside Canadian domestic airspace.*

(ii) *An aircraft for which the Minister has issued a certificate of airworthiness, is considered to be fully in compliance with Article 31 of the ICAO Convention, hence meeting the code established in Annex 8 by the International Civil Aviation Organisation (ICAO). Aircraft meeting this code can be flown without, in regard to airworthiness, further approval, in the airspace of any participating ICAO State. Conversely, an aircraft, for which a special certificate of airworthiness or a flight permit is issued by the Minister, is not considered to be in compliance with all requirements of the code of ICAO - Annex 8, and cannot be flown in the airspace of another country without special authorisation by the civil aviation authority of the other country.*

507.02 *Issue of a Certificate of Airworthiness*

(1) A Certificate of Airworthiness (C of A) shall be issued for an aircraft which fully complies with all standards of airworthiness for aeroplanes in the normal, utility, aerobatic, commuter and transport category, rotorcraft in the normal and transport category, glider, powered glider, airship, or manned free balloon, as applicable.

(amended 1999/06/01)

Information Notes:

(i) *The C of A is transferable with the aircraft when sold or leased, providing the aircraft remains a Canadian registered aircraft.*

(ii) *The C of A also provides an indication of the aircraft compliance status in respect of the noise limitations specified in Chapter 516 of this manual.*

(iii) *When applying for a C of A it is advisable for the owner to have, or obtain a copy of the applicable type certificate data sheets. A copy of the data sheets can be obtained from the type certificate holder.*

(iv) *Very Light Aeroplanes (VLA), certified to VLA standards, are included in the normal or utility category.*

(amended 1999/06/01)

(2) Where the application is made in respect of an aircraft for which an export airworthiness certificate (EAC) has been obtained, the applicant shall ensure that the aircraft:

(a) is eligible for Canadian registration and a certificate of airworthiness;

(b) is being imported as a complete aircraft;

(c) has the manufacturer's identification plates, or equivalent markings, attached to the aircraft, engine(s), and propeller(s) as required by CAR 201.

(3) Where the application is made in respect of an aircraft for which the last permanent flight authority issued was a Special Certificate of Airworthiness - Owner-maintenance, in addition to subsection (1), the following requirements shall be met:
(amended 2002/03/01)

(a) all aircraft engines, propellers and primary instruments are overhauled by an approved maintenance organization that holds a rating in the applicable category; and

(b) the aircraft, including its installed systems and equipment, undergoes a complete inspection for conformity to type design, and a maintenance release to that effect is signed by an appropriately rated Aircraft Maintenance Engineer.

507.03 Issue of Special Certificates of Airworthiness

(1) A special certificate of airworthiness (Special C of A) is issued for an aircraft that does not meet all the requirements for a certificate of airworthiness, in any one of the following classifications:

(a) Provisional;

(b) Restricted;

(c) Amateur-built;

(d) Limited; and

(e) Owner-maintenance.

(amended 2002/03/01)

(2) Special Certificate of Airworthiness - Provisional

A Special C of A in the Provisional classification is issued for an aircraft for which a provisional type certificate has been issued.

(3) Special Certificate of Airworthiness - Restricted

A Special C of A in the Restricted classification can be used for:

(a) an aircraft with a type certificate in the restricted category; or

(amended 2002/03/01)

(b) an aircraft that has been modified in such a manner that it no longer complies with the basis of its original type certificate.

(amended 2002/03/01)

Information Notes:

(i) It is the modification to the aircraft, not the type of operation, that determines if a special C of A in the restricted classification is required. Modifications to conduct the following types of operations may require this re-classification:

(amended 2002/03/01)

(a) aerial advertising using other than a towed banner;

(b) aerial fire-fighting;

(c) aerial photography and survey;

(d) aerial application services;

(e) any other similar services.

(ii) Section 507.08 of the CARs provides for the issuance of more than one flight authority to an aircraft to allow conversion between a C of A and a Special C of A - Restricted.
(amended 2002/06/01)

(4) Special Certificate of Airworthiness - Amateur-built

CAR 507.03(b) provides that a Special C of A in the Amateur-built classification shall be issued by the Minister for an aircraft which is constructed in accordance with, and meets the requirements of CAR 549 along with its associated standards.

Information Note:

Subpart 49 of the CARs is still at the draft stage. In the mean time, pending the promulgation of Subpart 49, the requirements of Chapter 549 of the Airworthiness Manual in effect up to the promulgation of the CARs continue to apply.

(5) Special Certificate of Airworthiness Limited

A Special C of A in the Limited classification is issued by the Minister for:

(a) aircraft for which a flight permit (Private) had been issued on or before January 1, 1989;

Information Note:

The continuous flight permit was converted to the Special C of A on January 1, 1989.

(b) aeroplanes of a type which have been accepted for use in the military service and which are approved by the Minister for operations, other than those conducted under CAR Part IV or CAR Part VII, providing the aeroplane has been maintained to standards acceptable to the Minister which afford a level of safety at least equivalent to that provided by the maintenance standards set out in Chapter 571 of this manual; and has been subject to evaluation leading to its acceptance by the Minister; or

(c) any other aircraft, except a rotorcraft, that has been approved by the Minister for operations other than those conducted under CAR Part IV or CAR Part VII.

Information Note:

Additional guidance concerning the suitability of ex-military aircraft in respect of a flight authorisation is in Appendix F of this chapter.

(6) Special Certificate of Airworthiness - Owner-maintenance

(amended 2002/03/01)

(a) A Special C of A in the owner-maintenance classification is issued for recreational purposes only.

Information Note:

Aircraft eligible for a Special Certificate of Airworthiness - Owner-maintenance are listed in Appendix H of this Standard.

(b) Each aircraft in respect of which a Special C of A - Owner-maintenance is in effect, is marked on the side of the fuselage, in a position that is readily visible to persons entering

the aircraft, in letters at least 10 mm (3/8 in.) high and of a colour contrasting with the background, with a placard containing the following statement:

WARNING

**SPECIAL CERTIFICATE OF AIRWORTHINESS -
OWNER-MAINTENANCE
THIS AIRCRAFT DOES NOT COMPLY WITH INTERNATIONALLY
RECOGNIZED AIRWORTHINESS STANDARDS**

AVIS

**CERTIFICAT SPÉCIAL DE NAVIGABILITÉ - MAINTENANCE PAR
LE PROPRIÉTAIRE
CET AÉRONEF N'EST PAS CONFORME AUX NORMES DE
NAVIGABILITÉ
INTERNATIONALES RECONNUES.**

(c) Each aircraft in respect of which a Special C of A - Owner-maintenance is in effect, and each engine, propeller and life-limited part installed on such an aircraft, has the letter "X" permanently etched, engraved or stamped at the end of the model designation and serial number on the identification plate required by CAR 201.01.

(d) A person may have an aircraft type added to the list of aircraft eligible for a Special C of A - Owner-maintenance, by submitting a written request to the Minister, certifying that the aircraft type and model meet the requirements outlined in paragraph (6)(e).

Information Note:

A written request must be submitted to the Director, Aircraft Maintenance and Manufacturing, Ottawa, Canada, certifying that the aircraft type and model meet the requirements outlined in paragraph (6)(e).

(e) An aircraft type and model may be included in Appendix H of this Standard, "Aircraft eligible for a Special Certificate of Airworthiness - Owner-maintenance", where:

- (i) the aircraft is of a type certified in accordance with Chapters 522 or 523 of the *Airworthiness Manual*, or an equivalent foreign standard;
- (ii) the aircraft type certificate does not authorize more than four occupants;
- (iii) the maximum certificated take-off weight (MCTOW) of the aircraft does not exceed 1,814 kg (4,000 pounds);
- (iv) the aircraft is of a type and model that has not been manufactured during the 60 months preceding the date of application;
- (v) fewer than 10% of Canadian aircraft of the type and model concerned are operating in Canadian commercial air service at the time of application;
- (vi) the aircraft type and model is powered by a single, normally aspirated, piston engine, and is unpressurized; and
- (vii) except for gliders, powered gliders or aircraft with airframes of wooden construction, the aircraft type and model has a fixed landing gear and a fixed pitch propeller.

507.04 *Issue of a Flight Permit*

(1) Flight permits shall only be issued on a temporary (12 months or less) basis where the aircraft in respect of which an application is made does not conform to the conditions of issue for a C of A or a Special C of A. A flight permit is issued in one of the following classifications:

- (a) Experimental;
- (b) Specific Purpose.
- (2) Flight Permit - Experimental

An experimental flight permit is issued for any aircraft, excluding aircraft that are operated under a special certificate of airworthiness in the owner-maintenance or amateur-built classification, which is manufactured for, or engaged in, aeronautical research and development, or for showing compliance with airworthiness standards.
(amended 2002/03/01)

(3) Flight Permit - Specific Purpose

A specific purpose flight permit is issued for an aircraft which does not conform to the applicable airworthiness standards, but is capable of safe flight. It provides a flight authority in circumstances when a certificate of airworthiness is invalidated, or there is no other certificate or permit in force.

Information Note:

Specific purpose flight permits can be issued for:

- (a) *Ferry-flights to a base for repairs or maintenance;*
- (b) *Importation or exportation flights;*
- (c) *Demonstration, market survey, or crew training flights;*
- (d) *Test purposes following repair, modification or maintenance; or*
- (e) *Other temporary purposes.*
- (4) Flight Permit Authorizations

Information Note:

Detailed conditions and responsibilities regarding flight permit authorisations can be found in Subchapter 505F of the Airworthiness Manual.

- (a) Authorization to issue flight permits shall only be granted in respect of aircraft operated by air operators pursuant to CAR 706.
- (b) A special flight permit issued pursuant to a flight permit authorization provides for ferry-flights required for aircraft maintenance, or ferry-flights conducted with an inoperative engine on an aircraft equipped with three or more engines, provided the type design specified in the type certificate provides for such flights.
- (c) An application for a flight permit authorisation shall be made to the Transport Canada regional or district office assigned to the geographical area in which the owner of the aircraft resides or manages his/her business. The application shall specify the make, model, serial number and registration for each aircraft that will be subject to the flight permit

authorisation. Where company administrative documents usually refer to aircraft within a fleet under an alternate number, such as a tail number, that number shall also be provided. Submission of this attachment is not required in the case of an air operator who has included, or incorporated by reference, a list with this information in the Maintenance Control Manual required pursuant to CAR 706.

507.05 Validation of a Foreign Flight Authority

(1) Foreign flight authority validations issued by the Minister shall apply only to those segments of the flight where the aircraft is operating within Canadian airspace.

Information Note:

Under the provisions of the ICAO Convention on civil aviation, Canada has sovereignty over Canadian airspace. The validation of a foreign flight authority provides a means for Canada to exercise this sovereignty in cases when a certificate of airworthiness issued by a foreign state is not valid and the aircraft must operate on an authority that does not meet the criteria specified in Article 31 of the ICAO Convention. This type of flight authority will be validated where the applicant demonstrates that the aircraft which is not in compliance with applicable airworthiness standards is capable of safe flight.

(2) Where the application is made in respect of a foreign flight authority that is applicable to a fleet of aircraft, the documentation that accompanies the application shall include a list of the aircraft, by make, model, serial number, and registration. In addition, a copy of the company procedure used to dispatch the aircraft under the provisions of the foreign flight authority, translated into English or French when submitted in another language, shall accompany the application.

Information Note:

Foreign flight authority validation considerations are provided in Appendix D of this chapter.

507.06 Application for a Flight Authority - General

Information Note:

Under the provisions of the Canadian Aviation Regulations, the Minister is required to issue a flight authority where the aircraft meets the applicable conditions for the issuance of that authority. Under the provisions of section 8.7 of the Aeronautics Act, the Minister can inspect any aircraft for which an application for a flight authority has been received.

(amended 1998/06/01)

(1) Where documents required under CAR 507.06 are submitted in a language other than English or French, a translation in either of those languages shall accompany the documents.

(2) Application for a flight authority can be made by:

(a) the person to whom the aircraft registration has been issued;

(b) a person to whom custody and control of the aircraft has been transferred by virtue of a lease executed under CAR Part II; or

(c) a person authorised to make application on behalf of the person named in (a) or (b), where the authorisation meets the requirements of subsection (3).

(3) Authorisations for the purpose of subsection (2)(c) include:

(a) in the case of an aeroplane or helicopter not operated pursuant to CAR 406, or an aircraft not operated pursuant to CAR 604 or CAR Part VII, a document signed by the registered owner of the aircraft, that authorises the representative; or

(b) in the case of an aeroplane or helicopter operated under CAR 406, CAR 604, or an aircraft operated pursuant to CAR Part VII, a copy of that portion of an approved manual assigning the function to that person.

Information Notes:

(i) *The authorisation required by (3)(a) may be in the form of a copy of a signed work order, provided that work order has a pre-printed clause carrying this authorisation. Where a stamp is used to achieve this authorisation, the stamp imprint shall provide a specific signature block for this purpose.*

(ii) *Where the flight authority is requested in respect of a damaged aircraft, or in respect of an experimental test flight, applicants must be aware that the Minister may find it necessary to inspect the aircraft to determine it is safe for flight.*

(4) Except as provided in (5), all applications for a flight authority shall be made using the appropriate application form and shall include the supplemental documentation listed in Table 1.

(5) In cases of emergency, or when an aircraft is in a remote area, an application for a specific purpose flight permit can be made, and responded to by Telex or facsimile transmission, provided all of the information that would have been required by the completion of the application form is provided. Written records and copies of the Telex or facsimile transmission shall be retained by the applicant.

Information Notes:

(i) *Details for completing an "Application for a Certificate of Airworthiness" (form #24-0043) are found in Appendix A of this chapter.*

(ii) *Details for completing an "Application for a Flight Permit" (form #24-0044) are found in Appendix B of this chapter, which also specifies those instances where the use of this form may not be practical, and provides for alternate provisions.*

(6) Except where these standards allow the use of other methods, all completed forms shall be submitted in triplicate, together with any other documents prescribed in these standards, as applicable to the type of flight authority being requested.

(7) Specific standards for exceeding the maximum certified take-off weight in respect of aircraft used in aerial application services are found in Appendix G of this chapter. In addition to any other applicable requirement, applications for a flight authority made under this provision shall include the documentation listed in Appendix A.

(8) Application forms shall be submitted within 30 days of the date on which the condition of the aircraft was certified, and shall bear original signatures in permanent ink, of the owner and the certifying authorised person.

(9) Except as provided in subsection (10) and (11), all applications for a flight authority will be administered by the Transport Canada regional or district office assigned to the geographical area in which the owner of an aircraft resides or manages his business. In the

case of an application for the validation of a foreign flight authority, the application shall be forwarded to the Transport Canada regional or district office assigned to the geographical area in which the foreign aircraft is located, or is intended to be located.

(10) Applications for the validation of a foreign flight authority other than a Special Airworthiness Certificate issued by the FAA in the experimental classification for Amateur-built aircraft issued in respect of a foreign aircraft that is equivalent to a Canadian Amateur-built aircraft, will be submitted to the Chief, Aircraft Manufacturing and Maintenance at Transport Canada Headquarters, or forwarded through any Transport Canada regional or district office.

(11) Applications for the validation of a foreign flight authority shall be submitted to the Chief, Airworthiness Manufacturing and Maintenance, at Transport Canada Headquarters when the aircraft, in respect of which the application was made:

- (a) will be involved in a market survey or demonstration tour;
- (b) will be involved in an experimental flight or test program; or
- (c) is an aircraft registered in a state that is not a signatory to the International Civil Aviation Organisation (ICAO) Convention.

(12) Where an application for a flight authority is made in respect of an aircraft being imported into Canada, prior to submitting the application for a flight authority, the applicant is responsible for contacting the applicable Transport Canada office as provided for in subsection (9), and ensuring that the aircraft is eligible for import into Canada.

(13) In all cases, the applicant for any flight authority shall also have available for the aircraft:

(a) in respect of which a type certificate has been issued, other than aircraft that are operated under a special certificate of airworthiness in the owner-maintenance classification, the approved Aircraft Flight Manual or approved operating limitations as applicable;

(amended 2002/03/01)

(b) a Weight and Balance report, together with an equipment list which includes the weight and moment arm of each item of equipment not forming part of the type design;

(c) the aircraft Journey Log and other technical records assigned to that aircraft as required by CAR 605.92, or in the case of an application made in respect of a foreign aircraft, the equivalent; and

(d) except in the case of a specific purpose flight permit, the validation of a foreign flight authority, or an application made in respect of an amateur-built aircraft, an approved maintenance schedule to which that aircraft will be maintained pursuant to CAR 605.

Information Note:

Table 1 is to be read in conjunction with 507.06(4) of this chapter.

Table 1
(amended 2009/12/01)

TYPE OF AUTHORITY REQUESTED	REQUIRED DOCUMENTATION
Certificate of Airworthiness <ul style="list-style-type: none"> • under the following cases... • all cases where the requirements of Chapter 516 of the AWM are not part of the certification basis shown in the type certificate issued by the Minister: (amended 2009/12/01) 	A conformity statement, signed by a person authorised pursuant to CAR 507.10, attesting the compliance status of the aircraft in respect of those requirements.
<ul style="list-style-type: none"> • of a new aircraft that has been manufactured in Canada, pursuant to CAR 561: (amended 2009/12/01) 	A completed Statement of Conformity from the manufacturer, stating that the aircraft meets the applicable type design.
<ul style="list-style-type: none"> • of a new aircraft of foreign manufacture for which a Canadian type certificate has been issued: 	Subject to CAR 507.07 requirements, an export airworthiness certificate (EAC), issued by the civil aviation authority of the state of manufacture.
<ul style="list-style-type: none"> • of a used aircraft of foreign manufacture being imported with an export airworthiness certificate, issued by the civil aviation authority of a state with which Canada has a Bilateral Airworthiness Agreement: 	Subject to CAR 507.07 requirements: <ul style="list-style-type: none"> (a) documentation which provides a history of the maintenance carried out on the aircraft, shows the status of the scheduled maintenance and life limited items, and confirms that actions required by airworthiness directives have been carried out; and (b) documentation which provides a history of any modifications or repairs embodied.
<ul style="list-style-type: none"> • of a used aircraft which has been imported without an export airworthiness certificate: 	Subject to CAR 507.07 requirements: <ul style="list-style-type: none"> (a) a certification by the holder of an Aircraft Maintenance Engineer licence that the aircraft is in compliance with the applicable Canadian type certificate; (b) documentation which provides a history of the maintenance carried out on the aircraft, shows the status of the scheduled maintenance and life limited items, and confirms that actions required by airworthiness directives have been carried out; and (c) documentation which provides a history of any modifications or repairs embodied.

TYPE OF AUTHORITY REQUESTED	REQUIRED DOCUMENTATION
Special Certificate of Airworthiness • under the following cases... <ul style="list-style-type: none"> • Provisional: 	(1) Information regarding the intended uses of the aircraft; (2) The proposed limitations placed on the operation of the aircraft; and (3) The proposed restrictions regarding the number of crew or passengers which can be carried.
<ul style="list-style-type: none"> • Restricted: 	Details the nature of the special role intended for the aircraft, including any proposed restrictions or special conditions regarding the operation of the aircraft, and the crew and passengers which can be carried.
<ul style="list-style-type: none"> • Amateur-built: 	The data required for a special certificate of airworthiness listed in Chapter 549 of this manual (amended 2009/12/01)
Owner-maintenance: (amended 2002/03/01)	A conformity statement, signed by the owner, attesting the compliance status of the aircraft in respect of the pertinent requirements of Standard 507.03(6). (amended 2002/03/01)
<ul style="list-style-type: none"> • Limited: In respect of an aircraft for which a flight permit (Private) had been issued on or before January 1, 1989;	(1) Data sufficient to confirm that maintenance has been carried out in accordance with the applicable standards; (2) The purpose for which the aircraft is to be used; and (3) Information regarding flight limitations, if applicable.
<ul style="list-style-type: none"> • Limited: In respect of aeroplanes of a type which have been accepted for use in the military service and which are approved by the Minister for operations other than those conducted under CAR 406 or Part VII.	(1) A history of the aeroplane including, where applicable, documentation regarding all conversions performed from the original military configuration; and (2) Information regarding flight limitations, if applicable.
<ul style="list-style-type: none"> • Limited: In respect of any other aircraft.	Any data determined to be necessary giving regard to the individual situation at the time of application.
Flight Permit under the following cases... <ul style="list-style-type: none"> • Experimental: 	(1) A statement setting forth the purpose of the flight(s); (2) Sufficient data to identify the aircraft and its configuration, and except for aircraft previously type certified, or for which an equivalent foreign certification has been accepted by the Minister, three-view drawings or three-view photographs of the aircraft, provided those photographs depict aircraft dimensions; (amended 2009/12/01) (3) Sufficient data to assure the safety of operation of the

TYPE OF AUTHORITY REQUESTED	REQUIRED DOCUMENTATION
	aircraft as prescribed under CAR 521; <u>(amended 2009/12/01)</u> (4) The estimated calendar time required for the flights; (5) The proposed geographical areas over which the flight(s) will take place; (6) A weight and balance report; and (7) Any operating limitation(s).
• Specific Purpose:	(1) A statement detailing the specific purpose of the flight(s); (2) A list of any additional equipment, fuel or fuel carrying facilities necessary for the flight; (3) Proposed conditions and limitations for flight which differ from normal conditions and limitations for that aircraft; and (4) Where the application is made in respect of a damaged aircraft, details of that damage.
• Validation of a Foreign Flight Authority:	(1) A copy of the foreign flight authority; (2) The proposed flight itinerary; and (3) Any associated operating limitations sheets issued by the foreign authority.

507.07 Applications Made in Respect of Imported Aircraft

Information Note:

For the purposes of this chapter, the term "import" means acceptance on the Canadian register of an aircraft that was previously registered in another state, or newly manufactured in another state.

(1) An imported aircraft can be eligible for use in Canada where it can be shown and the Minister is satisfied that the aircraft conforms to an approved type design and is in a condition for safe operation.

(2) Conformity to an approved type design can be shown by means of:

(a) an export airworthiness certificate (EAC) issued by the civil aviation authority of a country with which Canada has entered into a Bilateral Airworthiness Agreement or a similar arrangement which provides for the acceptance of such certificates;

(b) an EAC issued by the civil aviation authority of a country with which Canada does not have an agreement, where a Canadian type certificate has been issued and the product is being exported from the country of manufacture;

(c) an airworthiness inspection to procedures detailed in paragraphs 507.07(5) to (12) of this chapter, for an aircraft imported without an EAC; or

(d) an airworthiness inspection for complete aircraft engines or propellers. This inspection shall be carried out in sufficient detail to ensure that the imported aircraft engine or propeller:

(i) is in compliance with the type design specified in the Transport Canada type certificate;

(ii) is in compliance with all applicable mandatory instructions issued by the civil aviation authority of the country of manufacture, and all applicable airworthiness directives;

(iii) has, in the case of any major repairs or major modifications made prior to importation, the required certification indicating that they are of an approved type and were made in accordance with accepted standards of workmanship;

(iv) has been subjected to a satisfactory operational check to the manufacturer's specifications; and

(v) is in a condition for safe operation.

(3) The Minister will accept the export airworthiness certificate (EAC) as proof of conformity to a type certificate where:

(a) the product was designed and manufactured in the country of export, type certified by the civil aviation authority of that country and type certified by the Minister;
(amended 2009/12/01)

(b) the product was manufactured in Canada by an approved manufacturer to a type design specified in a Canadian type certificate and there is a Bilateral Airworthiness Agreement or similar arrangement between Canada and the country of export; or

(c) the product, if manufactured in a country other than the country of export, was manufactured to a type design certified by both the country of export and the Minister, and there is a Bilateral Airworthiness Agreement or similar arrangement between Canada and the country of export.

(4) To be acceptable to the Minister, each EAC shall be properly signed by an authorised representative of the civil aviation authority of the country of export, and shall include the following information:

(a) a certification of conformity to the type design specified in the Canadian type certificate;

(b) a list of any major modifications and major repairs approved by the country of export and embodied in the product; and

(c) a list of all applicable airworthiness directives or equivalent notices, issued by the country of export, indicating which have been complied with.

(5) The Minister will accept an imported aircraft which does not have an EAC issued by the civil aviation authority of the exporting country where the aircraft is inspected and certified by a person authorised to do so under CAR 507.10. Inspection, including disassembly when necessary, depending on the technical history of the aircraft, shall be conducted as follows:

(a) if the technical history of the aircraft is sufficient, a 100-hour inspection, or equivalent, shall be carried out;

Information Note:

For the purposes of this section, "sufficient" in relation to technical history means, as a minimum, a maintenance release or equivalent certification for each maintenance task completed within the preceding year, and technical records in sufficient detail to enable a determination of:

(a) *the identity of the aircraft, each installed engine, and each installed propeller;*

(b) *the identity and airworthiness status of each installed serialised component;*

(c) *the time remaining before the next scheduled task on the applicable maintenance schedule; and*

(d) *the permissible time in service remaining for each life-limited part installed.*

(b) if the technical history of the aircraft lacks continuity, or does not, in the opinion of the "authorised person", contain sufficient data regarding the maintenance of the aircraft, engines, or other aeronautical products, disassembly and inspection are required in addition to that required in paragraph (5)(a); or

(amended 1999/06/01)

(c) if the technical history is not sufficient to determine the conformity and condition of the aircraft, an overhaul is required, except for those aeronautical products for which there is documentary evidence that the product has been overhauled within one year prior to the aircraft being imported.

(amended 1999/06/01)

(6) In all cases, the inspection shall determine, as a minimum, whether:

(a) the aircraft, engines, propellers and appliances are in compliance with the applicable type certificate data sheets or aircraft specifications;

(b) all applicable airworthiness directives (or foreign equivalents) have been complied with;

(c) major repairs and major modifications, carried out prior to importation, are in accordance with approved data and are appropriately certified;

(d) the airframe, engines, and propellers are free of corrosion within the limits prescribed by the applicable maintenance manuals;

(e) all aircraft systems, engines, propellers, appliances, and controls are functioning properly; and

(f) the time in service of each life-limited part does not exceed its maximum permitted life.

(7) When the aircraft has been inspected as required in subsection (5)(a) and (b), the owner shall submit a report to the Minister, detailing the inspection that was carried out, and the work required to bring the aircraft to a condition of conformity to the certified type design and of safe operation.

(8) After evaluation of the report and inspection of the aircraft, the Minister will determine if the work proposed will bring the aircraft to a state of conformity and to a condition of safe operation, or whether more work is required.

(9) The owner will be advised of the Minister's decisions with supporting details.

(10) If the aircraft is eligible for a certificate of airworthiness, it shall be brought to required standards, as necessary, through the use of the applicable maintenance manuals.

(11) On completion of the work, an application for a certificate of airworthiness can be submitted to the Minister in accordance with CAR 507.06 The Transport Canada "Conformity Certificate" (form #24-0045) including the description of work completed shall also be submitted with the application.

(12) The aircraft can be inspected by the Minister during the evaluation of the application and on completion of the work.

(13) To be acceptable for importation, an imported aeronautical product shall be identified in accordance with CAR 201. Aeronautical products imported from a country not requiring certain identification data will require the identification data be installed prior to acceptance.

(14) Each life-limited component, or any product containing a life-limited component, which has seen prior service shall be accompanied by its technical record containing details of all repairs and modifications carried out during its service life, and a record of accumulated time in flying hours or cycles, as may be applicable.

507.08 Issue of an Additional Flight Authority

(1) CAR 507.08 provides the means by which an aircraft can be issued with one or more additional flight authority(ies). In the case of aircraft that are subject to a type certificate, all assessments of aircraft condition shall be made in conformity to the basis of certification specified therein.

(2) CAR 571 and CAR 605 provide specific instructions to persons making assessments of aircraft condition and to those persons configuring aircraft in accordance with a modification of the type specified in CAR 507.08(1).

(3) A manual approved pursuant to CAR 706 can provide, as opposed to the requirement for a journey log entry, an alternate means to record the flight authority that is in effect, provided the procedure ensures that the flight crew is made aware of any limitations or operational conditions issued in respect of the alternative flight authority.

507.09 Operating Conditions

(1) CAR 507.09 provides that the Minister can subject a flight authority to one or more operational conditions, or any other condition the Minister determines to be appropriate for the safety of the aircraft.

(2) Some of the Operational Conditions that can be attached to a flight authority include, but are not limited to:

- (a) a brief description of the flight or the number of flights authorised;
- (b) the period during which the flight authority is valid;
- (c) instructions regarding the display of the flight authority;

- (d) as necessary, the requirement for signs or placards to show the condition of the aircraft and any operating restrictions;
- (e) the need for signs or placards to show the nature of the flight; and,
- (f) any operating limitations.

Information Note:

Detailed operating limitations and special conditions regarding flight authorities are itemised within Appendix D of this chapter.

507.10 to 507.19 Reserved

507.20 Issue of a Certificate of Noise Compliance (C of NC)

(amended 2000/12/01)

Pursuant to CAR 507.20 and subject to the requirements of CAR 507.21(3), where a C of A or an equivalent foreign flight authority is in effect in respect of an aircraft, a C of NC shall be issued in respect of that aircraft as follows:

- (a) in the case of a Canadian aircraft, the C of A shall be annotated to indicate that:
 - (i) the aircraft complies with the applicable noise emission standards and to indicate what those standards are; or
 - (ii) the noise compliance requirements are not applicable to the aircraft; and

Information Note:

In the case of an aircraft for which a flight authority is in force, and where compliance with the noise emission standards is noted on the flight authority document, re-issuance of the flight authority is not required.

- (b) in the case of a foreign aircraft:
 - (i) the flight authority shall be annotated to indicate that the aircraft complies with the applicable noise emission standards and to indicate what those standards are;
 - (ii) the flight authority shall be annotated to indicate that the noise compliance requirements are not applicable to the aircraft; or
 - (iii) issue a C of NC.

507.21 Application for a Certificate of Noise Compliance

(amended 2000/12/01)

(1) Pursuant to CAR 507.21, an application for a C of NC shall be made in writing and signed by a person meeting the requirements of CAR 507.06(2) and (3).

(2) Where documents required pursuant CAR 507.21 are submitted in a language other than English or French, a translation in either of those languages shall accompany the documents.

507.22 to 507.24 Reserved

Appendix A - Application for a Certificate of Airworthiness (#24 - 0043)

Copies of the application form will be provided, at no charge, by any Transport Canada office.

To assist in the completion of the application form, the following information and guidance is provided:

Block A1

If a provisional registration mark is assigned to an aircraft pursuant to CAR 202, the word "provisional" shall be included in Block A1.

Block A2

The square shown as "other" is included for future use in the event that a new type or configuration of aircraft, is accepted for use in Canada.

Block A3

The maximum certified take-off weight for configuration indicated in A2.

Block A4

Self explanatory

Blocks A5 and A6

The model designation and serial numbers of the aircraft shall be the same as those shown on the aircraft identification plate. Each engine and propeller model designation and serial numbers shall be the same as those shown on each engine and propeller.

Block A7

Hours to be recorded in this block shall be taken from the aircraft technical records required by CAR 605.92. It is important that, in the case of a used aircraft, the documents which provide a history of the aircraft are sufficient (as described in 507.07(5) of this chapter) and that data such as hours of operation are transferred to the new technical records and are included in this form. In the case of aircraft, only the comment "since new" applies, whereas either comment "since new" or "since overhauled" can apply to engines and propellers.

Block A8

Examples of aircraft which could qualify for a certificate of airworthiness, other than those which are Transport Canada type certified, are aircraft which have been given a provisional type certificate, Amateur-Built aircraft that meet the standards prescribed in *Airworthiness Manual* Chapter 549, and ex-military aircraft that meet the standards specified in Appendix F. When the standard is shown on the form as "other", a full description of the aircraft and applicable standards shall be attached to the form.

Block A9

The owner of an aircraft shall ensure that all airworthiness directives, including the most recent, have been implemented.

Block B1

All aircraft for which a certificate of airworthiness is requested shall be of a type for which standards of airworthiness have been established by the Minister in accordance with CAR Part V. The box identified as "Other" provides for any new type of aircraft not yet fully covered by Transport Canada airworthiness standards, or for an aircraft, used solely by a Canadian government agency or department, which could meet Transport Canada standards.

Block B2

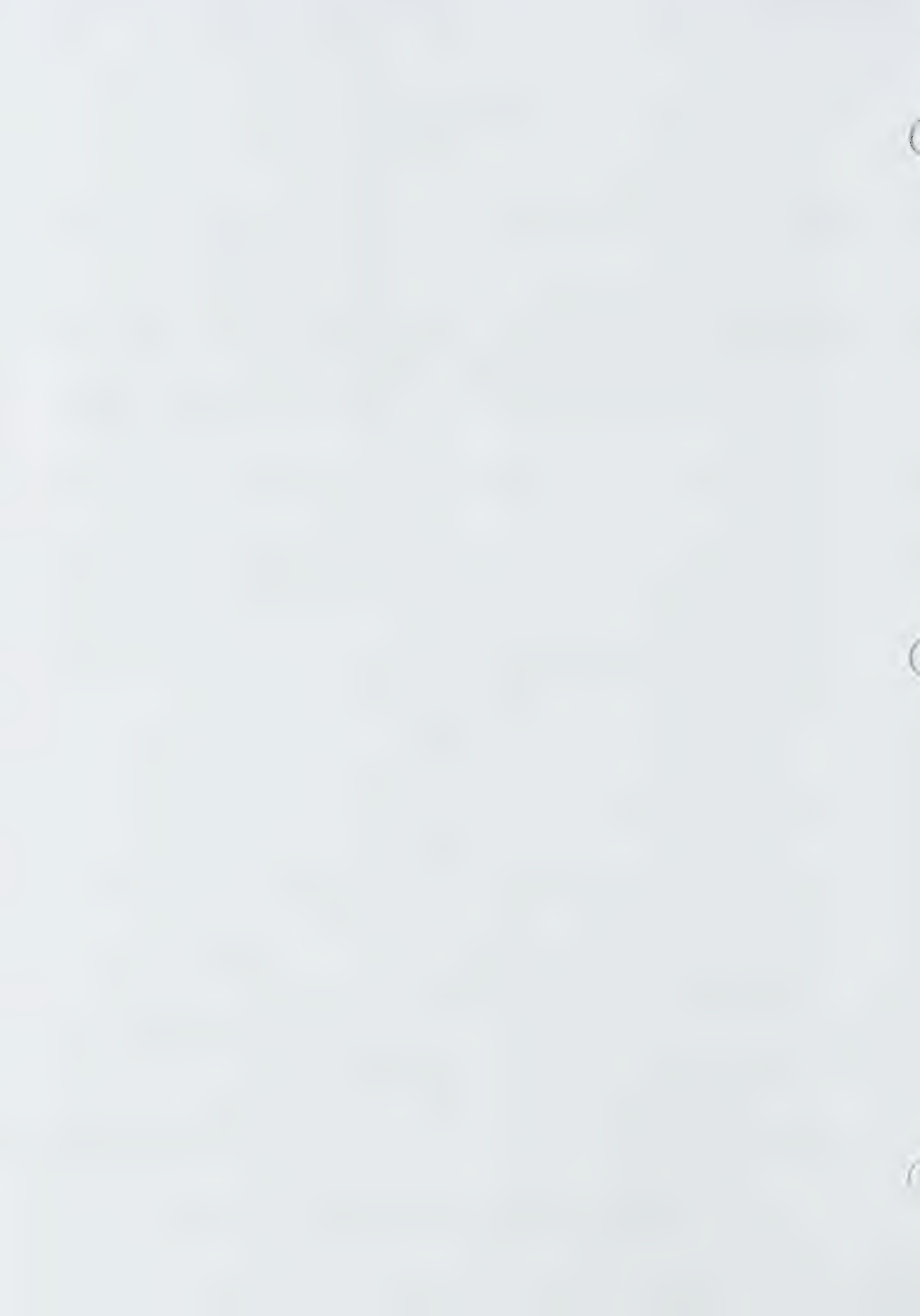
Particular care shall be taken to include, as an attachment or attachments, all of the additional information listed in Table I of 507.06 of this chapter.

Blocks C1 and 2

In the case of an Amateur-Built aircraft, the builder can certify that the aircraft is airworthy, in conformity with CAR Part V. Forms submitted to Transport Canada are to bear an original signature in permanent ink.

Block C3

Will be completed by the Transport Canada issuing officer.



Appendix B - Application for a Flight Permit (#24 - 0044)

(1) The Use of Electronic Transmission Methods

(a) The use of a facsimile transmission in lieu of form #24-0044 ("Application for a Flight Permit") is a privilege extended by the Minister to aircraft owners, and may only be used when a flight permit cannot be formally requested and issued in a timely manner. Examples of when a facsimile may be used are when an aircraft has been damaged at a remote location, and written communications regarding a ferry-flight is not practical, or when a delay under other circumstances would create a serious problem for the owner or purchaser of an aircraft. A facsimile is not meant to be used as a convenient means of avoiding the normal processes of requesting and issuing a flight permit.

(amended 2002/06/01)

(b) If a person requesting a flight permit by electronic transmission has in their possession, or can obtain, a copy of form #24-0044, the facsimile can be of the same format as the form (i.e. A.1 = name etc., B.2(a) - C.1 Churchill - C.2 Montreal, etc.).

(c) Electronic mail (e mail) systems shall not be used for the purpose of issuing flight authorities.

(2) The following information and guidance is provided to assist in completing form 24-0044:

(a) **Blocks A.3 to 5** - The information in these blocks shall be identical to that shown on the aircraft identification plate.

(b) **Block - B.1** - Self-explanatory.

(c) **Block - B.2** - (a), (b) & (c) - Self-explanatory.

(d) **Block - B.2** - (d) Other Purpose - In most cases it will be necessary for the applicant to attach detailed information to specify the purpose of the flight permit, or in lieu of, the information required in blocks C.1 to C.3.

(amended 2002/06/01)

(e) **Blocks - C.1 to 5** - Self-explanatory - primarily applicable to B.2 (a), (b), and (c).

(f) **Blocks - C.6 and 7** - Additional information either to expand on, or in lieu of, information required in these blocks can be attached to the form. When information is attached, a note to this effect shall appear in the block.

(g) **Block D** - Signatures. The declaration shall be signed by a person who may lawfully sign a maintenance release pursuant to section 507.10 of the CARs, and shall include the authorization number of the person certifying (AME or ACA holder). The application shall be signed by the owner of the aircraft or by his authorized representative, pursuant to section 507.06 of the CARs.

(amended 2002/06/01)

Sample Form #24-0044



Transport Canada
Transports Canada

APPLICATION FOR A
FLIGHT PERMITDEMANDE DE
PERMIS DE VOL

INSTRUCTIONS

Print or type all entries. Reference *Airworthiness Manual Chapter 507* for the use and disposition of the form.

Dactylographier ou écrire en lettres moulées. Consulter le chapitre 507 du *Manuel de navigabilité* qui précise la façon de remplir et d'achever le présent formulaire.

A. AIRCRAFT IDENTIFICATION - IDENTIFICATION DE L'AVION

1. Owner - Propriétaire		
2. Address - Adresse	3. Aircraft Manufacturer - Constructeur de l'avion	4. Model - Modèle
	5. Serial Number - Numéro de série	6. Nationality and Registration Marks Marques de nationalité et d'immatriculation

B. PURPOSE OF FLIGHT PERMIT (Check applicable boxes) - OBJECTIF DU PERMIS DE VOL (Cochez la ou les case(s) voulue(s))

1. ☐ Ferry flights to a base for repairs or maintenance
Un vol de convoyage vers une base en vue de réparation ou de maintenance
2. ☐ Delivery, demonstration, market survey, or crew training flights
Un vol de livraison, de démonstration, d'étude de marché ou d'entraînement d'équipage
3. ☐ Flights for the purpose of showing compliance with airworthiness standards
Un vol de démonstration de conformité aux normes de navigabilité
4. ☐ Other purpose (Specify)
Autre fin (Préciser)

C. FLIGHT DESCRIPTION AND AIRCRAFT LIMITATIONS

DESCRIPTION DU VOL ET LIMITATIONS DE L'AVION

Description of Flight(s) Use attachment when appropriate		Description du vol(s) Joindre une feuille au besoin	
1. From - Aéroport de départ	2. To - Aéroport de destination		
3. Via - Escales	4. Effective date (Y-M-D) Date effective (A-M-J)	5. Termination date (Y-M-D) Date limite (A-M-J)	

6. Aircraft does not meet the applicable airworthiness requirements as follows:
Raisons pour lesquelles l'avion ne satisfait pas aux exigences de navigabilité en vigueur :

7. The following maintenance conditions are considered necessary for safe operation:
Les conditions d'entretien suivantes sont nécessaires pour la conduite des vols en toute sécurité :

8. The following operating conditions are considered necessary for safe operation:
Les conditions d'exploitation suivantes sont nécessaires pour la conduite des vols en toute sécurité :

D. SIGNATURES

I hereby certify that the aircraft described above is in a condition for safe operation
Je, soussigné, certifie que l'avion décrit ci-dessus est en bon état de vol.

Signature, AME Licence No., ACA No. or RCA No.
Signature, N° de licence de TEA, N° d'autorisation ou N° d'autorisation restreinte
and - et

Date (Y/A-M-D/J)

Signature of the Registered Owner or Authorized Representative
Signature du propriétaire enregistré ou du représentant autorisé

Date (Y/A-M-D/J)

24-0044 (0309-04)

Canada

Completion Instructions

Reserved

Appendix D - Standardised Operating Conditions and Limitations

1. Standardised Special Operating Conditions

Standardised aircraft operating conditions have been developed for amateur-built aircraft to be used as initial operating restrictions and subsequently, as modified operating restrictions. The operating conditions peculiar to the operation are indicated on the flight authority which is issued by the cognisant Regional Director Airworthiness.

2. Foreign Flight Authority - Validation Considerations

Aircraft operating condition considerations are as follows:

- (a) the aircraft shall be formally or provisionally registered;
- (b) an appropriate valid flight authority issued by the State of Registry shall be in force;
- (c) the Canadian validation of the foreign flight authority shall be carried on board the aircraft with the foreign registration and flight authority documents during the flight in Canada;
- (d) the aircraft owner or pilot involved shall be informed that the *Canadian Aviation Regulations* (CARs) shall be complied with while the aircraft is in Canadian airspace;
- (e) the aircraft shall be operated by licensed pilots holding appropriate certificates or licences, issued or validated by Canada or the country of registry of the aircraft;
- (f) the Canadian validation shall be in the form of a letter or facsimile; and
- (g) the validity period shall be specified on the validation document.

3. Initial Standard Operating Conditions - Amateur-built Aircraft

The initial operating conditions to be endorsed on a Special C of A for amateur-built aircraft shall be as follows:

- (a) the specific base, indicated by Transport Canada, from which the aircraft can be flown so as to afford the maximum level of safety possible;
- (b) the aircraft shall not be operated (flown) more than 25 nautical miles from the base mentioned in (a) except with written authorisation of the Regional Director Airworthiness (name of Region), which will be provided, taking into account the safety of the flight;
- (c) the aircraft shall not be flown over any built-up area, or open air assembly of persons;
- (d) carriage of persons other than for dual instruction is prohibited;
- (e) aerobatic flight is prohibited;
- (f) day VFR only; and

(g) during the first 5 hours of flight, the aircraft can only be flown only by pilots who have acquired not less than 100 hours of pilot-in-command on the same category of aircraft.

4. Standardised Operating Conditions - Amateur-built Aircraft Modified

(1) The operating restrictions listed in Section 3 shall apply until the amateur-built aircraft listed below have accumulated the following flight time:

(a) Powered fixed-wing aircraft - shall be the number of hours required to rectify all design and/or construction errors plus an additional 25 hours during which the aircraft has required only the maintenance, repair, and inspection associated with normal aircraft operations.

(b) Fixed-wing gliders - 10 hours.

(c) Helicopters and powered gyroplanes (gyrocopters) - in accordance with sub-paragraph 4(1)(a).

(d) Unpowered gyroplanes (gyrogliders) - 100 flights including 20 flights in which the towline is released at a height of not less than 30 metres (100 feet) above the surface.

(e) Balloons - 10 hours, including 10 flights.

(2) When modified operating conditions are authorised to be endorsed on a Special C of A for amateur-built aircraft, they shall be as follows:

(a) VFR only; and

(b) aerobatic flight is prohibited (except as provided in Section 6 of this Appendix).

5. Standard Operating Conditions - Aerobatic Flight Certification

In the case of the following amateur-built aircraft, once the first 25 hours of flight have been completed, the Regional Director Airworthiness can approve the deletion of the aircraft operating condition "aerobatic flight is prohibited" from a Special C of A:

(a) Pitts Special aircraft models S-1, S-1C, S-1 D, S-2E;

(b) Steen Skybolt;

(c) Cuby Acro Trainer;

(d) Zenair CH 150;

(e) Acro Zenith CH 180; and

(f) Christen Eagle 11.

6. Standard Operating Conditions

When aerobatic flight is approved for the following aircraft, the pertinent standardised aircraft operating conditions are:

(a) Pitts Special

The aerobatic flight manoeuvres are restricted by:

- (i) the stall boundaries of the aircraft;
- (ii) a positive manoeuvring limit load factor of 6.0 (plus 6G);
- (iii) a negative manoeuvring limit load factor of -3.0 (minus 3G); and
- (iv) V_{NE} 217 MPH.

(b) Steen Skybolt

- (i) the aerobatic flight manoeuvres are restricted by the flight envelope graph, figure 2, (Appendix B), in the EAAC Technical Committee evaluation report EEACT-TER-3 which shall form part of the Special C of A;
- (ii) canopies fitted for ferrying or normal flight shall be replaced with conventional windshields when performing aerobatics;
- (iii) a copy of the flight envelope graph for the Steen Skybolt aircraft shall be attached to each Special C of A issued to a Steen Skybolt for aerobatics;
- (iv) where the Special C of A is endorsed for initial operating conditions, the following additional condition shall be included on the Special C of A: "Aerobatic flight is prohibited until after the aircraft has flown a minimum of 10 hours". (The condition will not be included on a Special C of A with modified operating conditions).

(c) Cuby Acro Trainer

The aerobatic flight manoeuvres are restricted by:

- (i) the stall boundaries of the aircraft;
- (ii) a positive manoeuvring limit load factor of 6.0 (plus 6G) at 1,350 lb. gross weight;
- (iii) a negative manoeuvring limit load factor of -3.0 (minus 3G) at 1,350 lb. gross weight; and
- (iv) V_{NE} 130 MPH.

(d) Zenair CH150 Zenith

The aerobatic flight manoeuvres are restricted by:

- (i) the stall boundaries of the aircraft;
- (ii) fuel to be carried in forward tanks only;
- (iii) positive manoeuvring limit load factor of 6.0 (plus 6G) at 1,150 lb. gross weight;

(iv) a negative manoeuvring limit load factor of -3.0 (minus 3G) at 1,150 lb. gross weight; and

(v) V_{NE} 195 MPH.

(e) Acro Zenith CH180

The aerobatic flight manoeuvres are restricted by:

(i) the stall boundaries of the aircraft;

(ii) positive manoeuvring limit load factor of 8.0 (plus 8G) at 1,150 lb. gross weight;

(iii) negative manoeuvring limit load factor of -8.0 (minus 8G) at 1,150 lb. gross weight; and

(iv) V_{NE} 260 MPH.

(f) Christen Eagle 11

The aerobatic flight manoeuvres are restricted by:

(i) the stall boundaries of the aircraft;

(ii) a positive manoeuvring limit load factor of 6.0 (plus 6G);

(iii) a negative manoeuvring limit load factor of -3.0 (minus 3G);

(iv) V_{NE} of 189 MPH;

(v) pilot instrument panel to be placarded "minimum fuel for aerobatic flight 6 U.S. gallons";

(vi) aerobatic C of G range 95.411 to 100.0 inches AFT of datum; and

(vii) aircraft to be operated in accordance with *Christen Eagle 11 Flight Manual*. Revision 03-20-80 (or subsequent).

7. Flight Permit - Experimental

Applicable aircraft operating conditions are developed by Transport Canada in regard to experimental flight permit for factory prototype aircraft. In order to afford the maximum level of safety possible, the operating conditions are revised as required and endorsed on the relevant flight permit.

8. Standard Operating Conditions - One-engine-inoperative Ferry-flight

Standardised aircraft operating conditions to be endorsed on individual flight permits or validations of a foreign flight authority with respect to the ferry-flight of a three or four engine aircraft with one-engine-inoperative are as follows:

(A) Ferry-flights of Canadian Aircraft through Canadian Airspace, Originating or Terminating in Canada

1) Valid for one-engine-inoperative ferry-flight from (name of airport or place) to (name of airport or place); take-off from runway(s) (specify by reference to the names tabled in Schedule 2 of this Appendix) is prohibited.

Information Note:

A Permit can only be issued for flight from a place where replacement/repairs cannot reasonably be expected to be made to a place where they can be made. Authorisation shall not be granted simply because replacement/repair is more convenient at one location than another.

2) The company Flight Operations Manual shall contain guidance to flight crews covering pre-flight and in-flight procedures and post-flight reporting requirements with respect to one-engine-inoperative ferry-flights but shall not contravene the *Aircraft Flight Manual*.

3) The aircraft shall be flown only by flight crews whose licences have been issued or validated by Transport Canada; within the previous twelve months, the crew shall have completed a training program, accepted by Transport Canada, on one-engine-inoperative ferry-flights on the aircraft type, and be authorised by the Operations Manager as being capable of conducting a safe one-engine-inoperative ferry-flight.

4) Only essential flight crew members shall be carried. Carriage of passengers or other crew members is prohibited.

5) The carriage of cargo is prohibited.

Information Note:

In the case of aircraft which must be ballasted in order to maintain a proper centre of gravity position, this restriction can be amended to read "The carriage of ballast/cargo in excess of (weight in pounds or kilograms) at fuselage station (specify) is prohibited". The weight/station specifications are to be negotiated with carriers as appropriate.

6) The maximum gross take-off weight (MGTOV) shall be the minimum necessary with due regard to a safe reserve fuel load and centre of gravity considerations, and the MGTOV shall not exceed that contained in the *Aircraft Flight Manual* procedures for one-engine-inoperative flights.

7) The pilot-in-command of the aircraft shall, at least one hour prior to the proposed departure of the flight, inform the Airport Duty Manager and the Air Traffic Control unit at the point of departure and intended landing, of the intention to ferry the aircraft with one-engine-inoperative and provide information on the proposed flight required by those authorities to arrange for emergency equipment, special procedures, etc.; the flight plan shall be annotated "one- engine-inoperative ferry" in the "remarks" block.

8) One-engine-inoperative ferry-flights are permitted only in compliance with the applicable limitations, procedures and performance data provided in the *Aircraft Flight Manual*.

9) Take-off and initial climb to 1,500 feet above ground level shall not be made over the built-up areas of any town or other settlement or over an open air assembly of persons.

10) The pilot-in-command shall, prior to take-off, ensure that the take-off runway and departure path selected will, in the event of an additional engine failure during or after take-off and climb to 1,500 feet above ground level, enable the flight to continue without jeopardising the safety of persons and property on the ground.

11) The pilot-in-command of the aircraft shall inform the controlling Air Traffic Control unit, upon each initial radio contact, of the one-engine-inoperative status of the aircraft.

12) For the flight to take place, the weather at the airport of departure shall be at least VFR, and the weather at the point of intended landing shall be forecast to be at least VFR for the estimated time of arrival.

13) Each flight shall be authorised in writing (a facsimile is acceptable) by the Operations Manager; the authorisation shall include a certification that the pilot is duly qualified to conduct one-engine-inoperative ferry-flight, and the pilot-in-command shall carry that authorisation and this flight permit in the aircraft during the ferry-flight.

14) Flight over foreign territory is prohibited without the permission of the foreign Air Authority.

(B) Ferry-flight of Foreign Aircraft Originating Outside of Canada and Terminating in Canada

At least the following conditions/limitations shall be specified when validating a flight authority regarding a one-engine-inoperative ferry-flight of a foreign aircraft into Canada.

1) Valid for flight in Canadian airspace from (specify point of entry) to (specify destination).

2) The aircraft shall be flown only by flight crew whose licences have been validated by (specify country of registry).

3) Only flight crew members shall be carried. Carriage of passengers or other crew members is prohibited.

4) The carriage of cargo is prohibited; ballast/cargo is to be carried only in accordance with the Information Note to Condition 5) in Section 8(A) of this appendix.

5) The maximum gross take-off weight shall be the minimum necessary with due regard to safe fuel reserve and centre of gravity considerations, if ballast/cargo is required.

6) The approved *Aircraft Flight Manual* shall contain performance data and operating procedures for all phases of one-engine-inoperative ferry-flights and the aircraft shall be operated in accordance with the performance limitations contained in that manual.

7) The pilot-in-command shall inform Canadian Air Traffic Control Services, upon initial radio contact of the one-engine-inoperative status of the aircraft.

8) For the flight to take place, the weather at the airport of departure shall be at least VFR at take-off.

9) In order to enable the validation of the flight authority to provide the maximum degree of safety for the operation of the aircraft, the flight shall be authorised in writing (a facsimile is acceptable) by the Operations Manager. The authorisation shall include a certification that the pilot-in-command is duly qualified to conduct the one-engine-inoperative flight.

10) A flight permit for the flight shall have been issued by the State of Registry, and that permit, together with this validation, shall be carried aboard the aircraft.

11) Valid in Canadian airspace only.

(C) Ferry-flight of Foreign Aircraft Originating in Canada and Terminating Outside of Canada

At least the following conditions/limitations shall be specified when validating foreign flight authority for a one-engine-inoperative ferry-flight of a foreign registered aircraft from Canada:

1) Valid for a one-engine-inoperative ferry-flight from (name of airport or place) to (point of departure from Canadian airspace; take-off from runway(s) (specify by reference to Schedule 2 of this Appendix where applicable) is prohibited.

2) The aircraft shall be flown only by flight crews whose licences have been issued or validated by (specify country of registry).

3) Only flight crew members shall be carried. Carriage of passengers or other crew members is prohibited.

4) The carriage of cargo is prohibited; ballast/cargo is to be carried only in accordance with the Information Note to Condition 5) in Section 8(A) of this appendix.

5) The maximum gross take-off weight shall be the minimum necessary with due regard to safe reserve fuel load and centre of gravity considerations.

6) The pilot-in-command of the aircraft shall, at least one hour prior to the proposed departure of the flight, inform the Airport Duty Manager and the Air Traffic Control unit at the point of departure and intended landing, of the intention to ferry the aircraft with one-engine-inoperative, and to provide information on the proposed flight as required by those authorities

to arrange for emergency equipment, special procedures, etc.; the flight plan shall be annotated "one-engine-inoperative ferry" in the remarks block.

7) The approved aircraft flight manual shall contain performance data and operating procedures for all phases of one-engine-inoperative ferry-flights and the aircraft shall be operated in accordance with the performance limitations contained in that manual.

8) Take-off and initial climb to 1,500 feet above ground level shall not be made over the built-up areas of any town or other settlement or over an open air assembly of persons.

9) The pilot-in-command shall, prior to take-off, ensure that the take-off runway and departure path selected will, in the event of an additional engine failure during or after take-off and climb to 1,500 feet above ground level, enable the flight to continue without jeopardising the safety of persons and property on the ground.

10) The pilot-in-command of the aircraft shall inform the controlling Air Traffic Control unit, upon each initial radio contact, of the one-engine-inoperative status of the aircraft.

11) For the flight to take place, the weather at the airport of departure shall be at least VFR.

12) In order to enable the validation of the flight authority to provide the maximum degree of safety for the operation of the aircraft, each flight shall be authorised in writing (a facsimile is acceptable) by the Operations Manager; the authorisation shall include a certification that the pilot-in-command is duly qualified to conduct the one-engine-inoperative ferry-flight.

13) A flight permit for the flight shall have been issued by the State of Registry of the aircraft and that permit, together with this validation shall be carried aboard the aircraft.

14) Valid in Canadian airspace only.

9. Ferry-flight after an Accident

When an aircraft requires a flight permit for ferry to a maintenance base subsequent to an accident, the Regional Director Aviation Licensing shall develop, and provide to the Regional Director Airworthiness, appropriate aircraft operating conditions to ensure the safety of that flight.

10. Aircraft Operating Conditions (Matrix)

Transport Canada regional offices will, using the matrix tabled in Schedule 1 of this appendix, develop and specify the operating conditions for all flight authorities listed thereon.

Information Notes:

The matrix is intended to provide a basis for specifications of appropriate aircraft operating conditions only, and will not in itself automatically provide all the operating conditions that will be required in every situation. Thus, in order to afford the highest degree of safety possible, it is expected that once the matrix has been consulted and the basic operating conditions set, the regional offices will thoroughly review the operating conditions and add or delete as required.

Schedule 1 - Matrix of Aircraft Operating Conditions

x = This condition shall form part of the flight authority.

xx = Keeping the aircraft safety in mind, application of this condition depends on the aircraft type and purpose for which the authority is requested.

No	Experimental Flight Permit	Specific Purpose Flight Permit	Special Certificate of Airworthiness	Ferry - flight Foreign Aircraft	Validation Foreign Flight Permit	Amateur - Built Initial Issue	Amateur - Built Modified
1	x	x	xx	x	x		
2	xx	xx	xx	x	x		
3	xx	xx	xx	xx	xx		
4	xx	xx	xx	xx			
5		xx					
6	xx	xx	xx	xx			
7	xx	xx	xx		xx		
8	xx						
9	xx	xx	xx	xx	xx	x	
10	xx	xx	xx	xx	xx		x
11	xx	xx		xx	xx		
12	xx		xx	xx	xx		
13	xx	xx	xx	xx	xx		

No	Experimental Flight Permit	Specific Purpose Flight Permit	Special Certificate of Airworthiness	Ferry - flight Foreign Aircraft	Validation Foreign Flight Permit	Amateur - Built Initial Issue	Amateur - Built Modified
14					X		
15	X				XX		
16				X	X		
17					X		
18		XX					
19	X	X	XX				
20						X	
21						X	
22						X	
23						X	
24						X	X
25						X	
26						X	
27			XX				
28	XX	XX		XX	XX		
29	XX	XX			XX		
30	XX	XX		X	XX		
31						X	X

1) The following conditions are applicable to any flight authority other than a certificate of airworthiness; this includes, but is not limited to, a special certificate of airworthiness, a flight permit, or the validation of a foreign flight authority:

Information Note:

The numbering of the special conditions and operating limitations detailed below corresponds with the numbering of the special conditions and operating limitations listed in the matrix of Schedule 1.

1. Valid for the purpose of (specify purpose);
2. Use as a commercial aircraft prohibited;
3. Crew members only, no passengers;
4. Crew members only - no passengers, except those persons whom the pilot-in-command determines as having a bona fide interest in the demonstration;
5. Crew members shall be the holders of valid and subsisting pilot licences issued or endorsed by Canada or the (state of registry to be specified) and which are appropriate to their duties;
6. Gross take-off weight not to exceed (specific weight to be listed on the flight permit);
7. Flight into known or predicted icing conditions prohibited;
8. V_{NE} to be established by flight test;
9. Day VFR only;
10. VFR only;
11. Flight over built-up areas prohibited;
12. Flight over built-up areas prohibited, and flight in congested airspace to be avoided;
13. Flight over built-up areas prohibited except during take-offs and landings;
14. Flight authority issued by (specify authority) shall be valid and shall be carried on board the aircraft together with this validation;
15. Controlling Air Traffic Control unit to be informed of the experimental nature of the aircraft and the evaluation program prior to flight;
16. The aircraft shall be formally or provisionally registered in (the) (specify state);
17. Compliance required with the conditions on the (specify type of permit and authority);
18. Controlling Agency at airport of take-off shall be informed of overload conditions prior to take-off;

19. Permission of the foreign aviation authority required prior to flight in their airspace;
20. The aircraft can only operate from a base indicated by Transport Canada in order to provide the highest degree of safety for the operation of the aircraft;
21. The aircraft shall not be operated (flown) more than 25 nautical miles from the base mentioned in (20) except with written authority of the Regional Director Aviation Licensing , (specify region) Region, which will be provided, taking into account the safety of the flight;
22. The aircraft shall not be flown over any built-up area, or open air assembly of persons;
23. Carriage of persons other than for dual instruction is prohibited (not to be used for single seat aircraft);
24. Aerobatic flight is prohibited (not to be used for balloons);
25. During the first 5 hours of flight, the aircraft can only be flown by pilots who have acquired not less than 100 hours of pilot-in-command flight time in powered aircraft (not to be used for gliders, gyroplanes, or balloons);
26. Aircraft is to be registered for "Private Purposes" only;
27. Aircraft to be placarded in the cockpit "Restricted - Agricultural Purposes Only";
28. Valid until (subject to Section 507.04 of this manual, specify a date which will permit the completion of the particular operation);
29. Flight testing to be conducted away from built-up areas, airways and air routes;
30. Ferry-flight (specify from) to (specify to) to be via (specify routing) with technical landings as required;
31. The side of the aircraft fuselage is to be placarded, in a place that is readily visible to persons entering the aircraft, in letters at least 3/8 inch in height and of a colour that contrasts sharply with the background on which they are shown, in both official languages, as follows:

NOTICE

*THIS AIRCRAFT IS OPERATING WITHOUT A
CERTIFICATE OF AIRWORTHINESS.*

AVIS

*CET AÉRONEF VOLE SANS CERTIFICAT DE
NAVIGABILITÉ.*

Schedule 2 - Prohibited Runways

Takeoff is prohibited from the following Canadian airport runways, for the purpose of a ferry-flight with one engine inoperative:

Airport	Airport Code	Prohibited Runway
Calgary	CYYC	16
Edmonton Municipal	CYXD	All runways
Kamloops	CYKA	08
Penticton	CYYF	34
Regina	CYQR	07
Saskatoon	CYXE	14
Vancouver	CYVR	08, 12
Victoria	CYYJ	02, 08, 13, 20, 31
Winnipeg	CYWG	07, 13, 18
Charlottetown	CYYG	21
Fredericton	CYFC	15
Halifax/Shearwater	CYAW	29, 34
Hamilton	CYHM	06
London	CYXU	26
Moncton	CYQM	29
Montréal/Dorval	CYUL	All runways
Montréal/ St. Hubert	CYHU	24, 28
Ottawa	CYOW	32
Quebec City	CYQB	12
St. Catharines	CYSN	24
Sydney, N.S.	CYQY	07

Airport	Airport Code	Prohibited Runway
Thunder Bay	CYQT	07
Toronto - Pearson International	CYYZ	06 Right, 15
Val d'Or	CYVO	36
Windsor	CYQG	25

Appendix E - Additional Guidelines Respecting the Application for a Flight Authority

1. Pursuant to CAR 605.92, technical records (which include the journey log) are required for all Canadian registered aircraft. In the case of an aircraft manufactured in Canada, the technical records shall be assigned for the first flight as soon as the aircraft is certified to be in a condition for safe flight by an Aircraft Maintenance Engineer (AME), or an authorised inspector of an approved company, or the builder of an amateur-built aircraft. The technical records shall be used from the first flight of an aircraft even if the aircraft is to be operated by the manufacturer prior to sale. The hours flown on a new aircraft will be transferred from the technical records to Transport Canada form #24-0043 when application is made for a certificate of airworthiness.

2. In the case of aircraft being imported into Canada, the owner shall assign aircraft technical records as soon as the aircraft reaches its import destination. The owner of the aircraft shall enter on the first page of each record the last two entries from the technical records which are being replaced. In the case of an aircraft which is inspected after arrival in Canada by a licensed AME, or an authorised inspector of an approved company, and has been brought to a state of conformity and a condition for safe operation, the work done and inspection performed shall be entered in the technical records. The hours shown on the technical records shall be transferred to Transport Canada form 24-0043 when applying for a certificate of airworthiness.

3. Under normal circumstances a copy of maintenance manuals are made available, by the applicant, to Transport Canada personnel for their review. However, when an aircraft is the first of its type for which a certificate of airworthiness is being requested, the type certificate holder shall provide Transport Canada with seven copies of the aircraft maintenance manual.

4. When applying for a certificate of airworthiness for aircraft being imported, in addition to ensuring that an aircraft is eligible for registration in Canada in accordance with CAR 202.16, it is the owner's responsibility to ensure that the aircraft being imported is de-registered in the exporting country, and that arrangements are made to have a copy of the de-registration papers, or other proof of deregistration, sent to the Transport Canada office to which the application for a Certificate of Registration is to be submitted.

5. When an aircraft is being imported with an Export Airworthiness Certificate, the applicant is responsible for arranging for the original copy of the Export Airworthiness Certificate to be sent by the civil aviation authority of the exporting country directly to the Transport Canada office to which the application for a Canadian certificate of airworthiness is to be submitted.

6. In the case of an aircraft being imported without an Export Airworthiness Certificate, the applicant is responsible for providing evidence that the aircraft has had a certificate of airworthiness, either by making available to the Transport Canada office the original of the

certificate, or a copy of the certificate, or certification from a civil aviation authority to the effect that a certificate of airworthiness had been issued for the aircraft.

7. The owner is fully responsible for all arrangements necessary to move the aircraft from the location from which delivery is to be made in the exporting country to a location in Canada where the aircraft is to be inspected or repaired as necessary preparatory to the submission of a request for a certificate of airworthiness.

8. After an aircraft has been deregistered, special permission to fly the aircraft out of the country is required, unless it is to be transported by land or water. Arrangements for such permission shall be made by the importer with the appropriate office of the civil aviation authority of the exporting country.

9. Information regarding the manner in which permission can be requested shall be provided by the exporter or obtained directly from the civil aviation authority of the exporting country. When required, Transport Canada personnel will refer the importer to the appropriate office of the civil aviation authority of the exporting country regarding permission to fly the aircraft out of the country.

10. When an aircraft being imported has not yet been registered in Canada, it can be flown to Canada under a foreign flight authority, provided that flight authority is validated in accordance with the requirements of this Chapter. This validation will cover those portions of the flight from the Canadian border to the destination airport identified on the application. If the aircraft is to land at a location other than its final destination, for customs clearance or refuelling, information regarding such landings shall be included in the request for the validation - refer to Section 507.05.

Information Note:

It is important, due to the various categories of aircraft covered by a special certificate of airworthiness, that the applicant is fully conversant with the information and data they will be required to provide with their application. It is recommended that the applicants contact the Transport Canada regional or district office serving their geographic area, to obtain from an Airworthiness Inspector the information with regards to these requirements.

Appendix F - Standards Respecting Ex-military Aircraft

Information Notes:

- (i) Over the past years, a number of ex-military aircraft, for which a type certificate was not issued, have been issued continuous flight permits for private non-commercial use under the provisions of the former Air Navigation Orders (ANO) Series II No. 3.
- (ii) With the publication of subchapter 507D of the Airworthiness Manual in 1991, privately registered aircraft for which a Canadian flight permit (Private) had been issued became eligible for the issue of a Special Certificate of Airworthiness - Limited. Ex-military aircraft imported since 1991 have been evaluated against the criteria set out in subchapter 507D, and Airworthiness Manual Advisory (AMA) 507D/2, in order to determine their eligibility for the issue of a flight authorisation. The eligibility criteria are now set out in this appendix.
- (iii) As a result of changing political situations, a large quantity of ex-military aircraft which do not meet civil standards have become available for private use. The lack of technical knowledge with respect to their design standards and/or military specifications, and uneasy access to the responsible military or civil aviation authority for follow-on technical support, including the availability of spare parts, is a cause for major concern.
- (iv) The prime reason for allowing ex-military aircraft to operate in Canada under a "Special Certificate of Airworthiness - Limited" is to afford the aviation public with the possibility to use these aeroplanes in special air events, and not necessarily for recreational purposes.

1. Definitions

For the purposes of this Appendix, the following definitions apply:

- "Ex-military aircraft" - means an aircraft, designed for, constructed for and used by a military organisation (Canadian or foreign).
- "Flight authority" - means a certificate of airworthiness, special certificate of airworthiness, or flight permit.
- "High performance aeroplane" - means an aeroplane requiring a minimum crew of one pilot and having a V_{NE} of 250 knots or greater, or a V_{SO} of 80 knots or greater.

2. Eligibility

Eligibility of foreign ex-military aircraft for the issue of a "Special Certificate of Airworthiness - Limited" is limited to those aircraft that were produced over 30 years ago and for which continued airworthiness support is no longer provided by the manufacturer.

3. Exclusions

The following types of aircraft will not be eligible for the issue of a "Special Certificate of Airworthiness - Limited":

- (a) high performance turbine engined aeroplanes;
- (b) ex-military aircraft types currently in production;
- (c) ex-military aircraft types for which continued airworthiness support is still available from the manufacturer;
- (d) ex-military aircraft destined for commercial use;

Information Note:

In any of the cases referred to at items (b), (c) and (d) above, the imported aircraft will require a type certificate activity in accordance with the procedures set out in Chapter 511 of this manual. Subpart 511 of the CARs is still at the draft stage. As an interim measure, pending the promulgation of Subpart 511, Chapter 511 of the Airworthiness Manual in effect up to the promulgation of the CARs continues to apply.

- (e) ex-military aircraft for which the type was previously issued with a type certificate;
- (f) any ex-military aircraft previously declared unacceptable for civil operation, for whatever reasons, by the military and/or civil aviation authorities of the country of origin.

4. Acceptance Criteria

Aircraft considered eligible for issue of a flight authority will still be required to meet the criteria set out in this chapter and developed in line with CAR 507.

5. Commitments

Information Note:

Before making any firm commitments for the importation of ex-military aircraft from any foreign country, interested parties are urged to contact the Transport Canada Airworthiness office located in their region for guidance as to whether the aircraft is eligible for, and can meet the requirements of a flight authority.

(1) Airworthiness Requirements

(a) Documentation

The following documentation, which shall be produced or translated in English or French, is required to provide the information necessary to trace the aircraft origin, service record, current configuration, and to support future maintenance and operation:

- (i) evidence of the company of manufacture, place and date of manufacture;

(ii) type and model data, including drawings or other technical data required to perform conformity inspection;

(iii) documented maintenance history of the aircraft from the time of manufacture. This includes technical records for the airframe, engine, propeller, and all life-limited components. Evidence that all applicable civil airworthiness directives, or foreign equivalents, and all mandatory military modifications and special inspections have been complied with;

(iv) the following manuals are required:

- a) *Flight Manual* or equivalent document;
- b) *Maintenance Manual*;
- c) *Inspection Requirements*;
- d) *Illustrated Parts Manual*; and
- e) *Structural Repair Manual*

(v) a maintenance schedule consistent with the requirements of CAR 605.86 and the relevant military technical publications; and

(vi) a current Weight and Balance report.

(b) Inspection

The aircraft is to be inspected by:

(i) the holder of an Aircraft Maintenance Engineer licence, properly endorsed for the type of aircraft in accordance with CAR 403; or

(ii) the holder of an Aircraft Maintenance Engineer holding a Restricted Certification Authority (RCA) for the aircraft type; or

(iii) a maintenance organisation approved by Transport Canada that has appropriately qualified personnel authorised to certify the aircraft.

(c) The inspection will determine that:

(i) the aircraft conforms to the type and model data;

(ii) no unauthorised modification has been embodied;

(iii) all modifications affecting airworthiness or safety, developed by the military authority since the aircraft was released from military service and considered mandatory by the military authority have been incorporated into the aircraft;

(iv) the aircraft is free of corrosion and structural damage;

(v) the aircraft engine conforms to type and model data and is in a condition for safe operation; and

(vi) the propeller conforms to type and model data and is in a condition for safe operation.

(d) In addition, a 100 hour inspection as detailed in an approved maintenance schedule or an equivalent detailed in the aircraft maintenance manual will be required.

(e) The Regional Director Airworthiness can subject the aircraft to an inspection by a Transport Canada Airworthiness Inspector to verify that the aircraft is in fit and safe condition for flight.

(f) Jettisonable Equipment/Stores

(i) Ex-military aircraft having an offensive armament capability shall have:

a) the guns/cannons disabled or removed;

b) the firing circuits deactivated;

c) casing jettison panels sealed;

d) rocket/bomb racks and hard points which are not an integral part of the airframe removed;

Information Note:

Hard points which serve as armament and external fuel tank mounting points can be retained for fuel tank mounting.

(ii) All jettisonable equipment will be subject to a Transport Canada assessment to ensure that the design is adequate to preclude inadvertent operation in flight.

(iii) To prevent inadvertent deployment on the ground, all jettisonable equipment will be equipped, while the aircraft is on the ground, with positive locking devices with appropriate warning flags attached. These locking devices will be removed prior to flight. This equipment shall be deactivated for static displays at air shows.

(g) The following life support systems will meet Canadian regulatory requirements:

(i) "g" suits;

(ii) oxygen pressure breathing equipment;

(iii) portable oxygen;

(iv) seat pack survival kit; and

(v) an ELT, when installed as part of the aircraft equipment.

(2) Inadequate Technical History

(a) Where the airframe maintenance history of the aircraft is determined, by the Regional Director Airworthiness, to be incomplete or inadequate, Transport Canada can advise the applicant that a more extensive inspection will be required to provide proof of the structural integrity of the aircraft. This could require the use of various nondestructive inspection techniques, strip and view or other in-depth inspection techniques.

(b) Where the maintenance history of the engine, propeller or any life limited component is determined to be incomplete or inadequate, that engine, propeller or component will require a complete overhaul and rectification or will be replaced with units of known history. The applicant can seek the advice of the Regional Director, Airworthiness regarding the depth of work required.

(c) In addition, the Minister can, if considered necessary to permit verification of the airworthiness of the aircraft, contact the Canadian Department of National Defence or the military authorities of the exporting country to identify:

- (i) the structural status of the aircraft at its time of release from military service; and
- (ii) any additional modifications affecting airworthiness and safety which have been developed and considered mandatory for the aircraft type by the military authority, since the aircraft in question was released from military service.

(3) Maintenance Certification

(a) The aircraft shall be maintained in accordance with an approved maintenance schedule as stipulated in CAR 605.86;

(b) Certification of maintenance will be in accordance with CAR 571.10.

(4) Operating Conditions and Limitations

(a) The aircraft is to be operated in accordance with the Transport Canada approved *Aircraft Flight Manual (AFM)* or equivalent document.

(b) In addition to any limitations included in the AFM as a result of the airworthiness review of the aircraft, special aircraft operating conditions and limits will be established for each aircraft by Transport Canada Aircraft Registration and *Special Flight Standards*. The establishment of those special operating conditions and limits will be made following an assessment of the purpose for which the aircraft was designed and the civil owner's planned use of the aircraft. General operating conditions will apply for various types of flight operations. These would include test, experimental, proficiency, ferry and demonstration flights. In order to afford the highest degree of operational safety, special operating conditions and limitations can be imposed to:

- (i) identify main operating base airport and maintenance base airport if not co-located;

- (ii) limit aircraft to use specific runways (clearways not heavily populated);
- (iii) limit aircraft use with respect to VFR, IFR, Day/night operations;
- (iv) specify minimum runway length based on aircraft performance for take-off and landing. Runway lengths should be adjusted for extreme atmospheric variations and the absence or failure of performance enhancing devices such as afterburner, thrust reversers, or drag chutes;
- (v) limit the number of suitable airports and the radius of action for testing, experimental and proficiency flying;
- (vi) consider the aircraft climb and descent profiles and, in conjunction with Air Traffic Services, establish corridors if necessary;
- (vii) restrict operations of single engine aircraft, or multi-engined aircraft that lack the ability to maintain altitude when one engine has failed, over densely populated areas to altitudes that permit it to glide to open areas;
- (viii) establish the requirement to advise Control Towers or aerodrome traffic of non-standard circuit patterns, approach speeds and overshoot procedures;
- (ix) establish the requirement for a manoeuvre profile approval prior to participation in air shows, air races, or motion pictures; and
- (x) control any other aspect of the aircraft operation considered necessary by the Minister to ensure the safety of the aircraft.

Information Note:

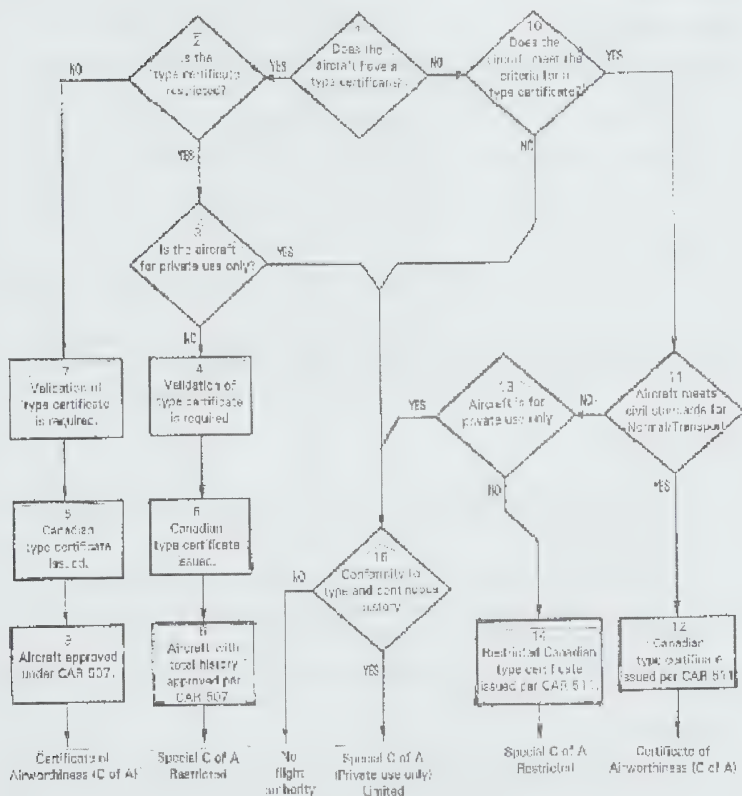
It is recommended that the applicant contact the Transport Canada Regional Superintendent Licensing to discuss the operating conditions and limitations that will be applicable to the aircraft. This is of particular importance if the aircraft in question is a high performance aircraft.

(5) Flight Crew Qualification Requirements

- (a) Flight crew qualification requirements are established by Transport Canada Flight Standards Branch, and set forth in CAR 401.
- (b) In the case of high performance ex-military aircraft, an individual rating will be required. The guidelines for the issuance of this type rating are described in paragraph 421.40(3)(c) of the Canadian Aviation Regulations Standards.

Information Note:

It is recommended that the applicant contact the Regional Superintendent, Personnel Licensing to discuss the requirements for a special endorsement, prior to buying the aircraft.



(6) Steps in the Evaluation Process

This explains, in detail, the individual steps to be taken in evaluating ex-military aircraft for flight authority.

Step Explanation

1. Has the aircraft type been issued a type certificate by Transport Canada or the civil aviation authority of the original country of manufacture?
2. Is the type certificate in the normal or restricted category?
3. Is the aircraft in question to be used for private (non-commercial) recreational flying only?
4. For an aircraft being imported, a validation of the type certificate by Transport Canada will be required.
5. Upon successful completion of the validation process a Canadian type certificate will be issued.
6. An aircraft can be approved for a Special C of A - Restricted provided it meets all the requirements applicable to it under the CAR, and a complete history of the aircraft is available. An aircraft can be imported under CAR 509, provided a complete history of the aircraft is available.
7. Same as Step 4.
8. Same as Step 5.
9. Aircraft will be issued a certificate of airworthiness. An aircraft can be imported under the provisions of CAR 507.
10. Is the aircraft of a type that was manufactured to civil airworthiness standards?
11. Through the familiarisation or validation process, the aircraft type is determined to meet the standards applicable to normal or transport category aircraft.
12. A Canadian type certificate will be issued in accordance with the procedures developed under CAR 511.
13. Same as Step 3.
14. If the aircraft is to be used commercially, a Canadian type certificate in the restricted category will be issued. The aircraft is then eligible for a Special Certificate of Airworthiness - Restricted.
15. Where the aircraft is to be used for private (non-commercial) recreational flying only, it will be eligible for a Special Certificate of Airworthiness - Limited, provided it is shown through inspection that it is in compliance with its original type design and that a complete history of the aircraft is available.

**Appendix G - Standards Respecting Agricultural
Aircraft Weight Limitations**

Reserved

**Appendix H -
Aircraft Eligible for a Special Certificate of
Airworthiness - Owner-maintenance
(amended 2008/06/30)**

<i>MAKE/TYPE</i>	<i>MODEL NUMBER/N° DE MODÈLE</i>
AERO COMMANDER	100, 100 180
AERONCA	C3
AERONCA	K, KC
AERONCA	S11AC, S11BC, S11CC
AERONCA	11AC, 11BC, 11CC
AERONCA	15AC, S15AC
AERONCA	S65CA
AERONCA	S7CCM, S7DC, S7EC
AERONCA	0 58B
AERONCA	50C
AERONCA	65C, 65CA, 65LA, 65LB
AERONCA	65TAC, 65TC
AERONCA	7AC, 7BCM, 7CCM, 7DC, 7EC
AEROTECHNIK	L 13 SEH VIVAT
ALON	A2, A2A
AMERICAN AVN	AA 1, AA 1A, AA 1B, AA 1C
AMERICAN AVN	AA 5, AA 5A, AA 5B
AMERICAN GENERAL	AG 5B
AVIONAUTICA	M100S
AVRO	AVIAN MKIVM
BEAGLE AUSTER	A61
BEECH	19A
BEECH	23, A23, A23 19, A23 24, A23A, B23
BELLANCA	14 13, 14 13 2, 14 13 3
BELLANCA (amended 2003/09/01)	14-19 (amended 2003/09/01)
BELLANCA	7ACA, 7ECA, 7GCAA, 7GCBC, 7KCAB
BOEING (amended 2004/03/01)	75 (amended 2004/03/01)

<i>MAKE/TYPE</i>	<i>MODEL NUMBER/N° DE MODÈLE</i>
BOEING (amended 2004/03/01)	A75 (amended 2004/03/01)
BOEING (amended 2006/06/30)	B75N1 (amended 2006/06/30)
BOEING (amended 2004/03/01)	E75 (amended 2004/03/01)
BOEING (amended 2004/03/01)	E75N1 (amended 2004/03/01)
BOEING (amended 2004/03/01)	PT-17 (amended 2004/03/01)
BURKHART GROB	G102 ASTIR CS, CS 77
BURKHART GROB	G102 CLUB ASTIR III, IIIB
BURKHART GROB	G102 STND ASTIR III
BURKHART GROB	G103 TWIN ASTIR
BURKHART GROB	G103 TWIN II
BURKHART GROB	G103A TWIN II ACRO
CALLAIR	A3, S1B1
CENTRAIR	ASW20F
CESSNA	120, 140, 140A
CESSNA (amended 2003/09/01)	150, 150A, 150B, 150C, 150D, 150E, 150F, 150G, 150H, 150J, 150K (amended 2004/12/01)
CESSNA (amended 2006/06/30)	A150K (amended 2006/06/30)
CESSNA (amended 2003/09/01)	170, 170A, 170B (amended 2004/12/01)
CESSNA (amended 2003/09/01)	172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H (amended 2004/12/01)
CESSNA (amended 2003/09/01)	175, 175A (amended 2004/12/01)
CESSNA (amended 2003/09/01)	177 (amended 2003/09/01)
CESSNA (amended 2003/09/01)	305A, 305C (amended 2004/12/01)
CHAMPION	402
CHAMPION	7AC, 7BCM, 7EC, 7ECA, 7FC, 7GC, 7GCA, 7GCAA, 7GCB, 7GCBC, 7KC, 7TEC
COLONIAL	C 1, C 2
CORCORAN	B, TG1A
CUB AIRCRAFT	J3C65
	J3C-50 (amended 2007/05/24)
DART	G

<i>MAKE/TYPE</i>	<i>MODEL NUMBER/N° DE MODÈLE</i>
DE CHATILLON	AIR100
DEHAVILLAND	DHC 1, DHC 1A 1, DHC 1B 1, DHC 1B 2, DHC 1B 2S3, DHC 1B 2S5
DEHAVILLAND	DH60GM
DEHAVILLAND	DH82A, DH82C
DEHAVILLAND	DH83C
DIAMANT	16.5
EIRI EINO RIIHELA	PIK 20E
EIRIAVION OY	PIK 20B
ERCO	E, G
ERCO	415C, 415 CD, 415 D
FAIRCHILD (amended 2004/12/01)	M62A-3 (amended 2004/12/01)
FAUVEL	AV36
FLEET	80
FORNEY	F 1, F 1A
FUNK	B85C
GARDAN	GY 80 160
GENERAL AIRCRAFT	G1 80
GLASER DIRKS	DG 100, DG 200, DG 200/17, DG 300, DG 400, DG 600
GLASFLUGEL	HORNET 206
GLASFLUGEL	LIBELLE H301, H301B
GLASFLUGEL	MOSQUITO, MOSQUITO B
GLASFLUGEL	STND LIBELLE 201, 201B
GLOBE	GC 1A
GROB	G 109, G 109B
GRUMMAN	AA 5B
GULFSTREAM	AA 5A, AA 5B

MAKE/TYPE	MODEL NUMBER/N° DE MODÈLE
ICA BRASOV	IS 28B2, IS 29D2
LAISTER	LP 49
LAISTER KAUFFMANN	LK10A
LET	L 13 BLANIK
LET	L 23 SUPER BLANIK
LET	L 33 SOLO
LUSCOMBE	8A, 8C, 8D, 8E, 8F, T8F
MAULE	M 4, M 4 T
MILES HAWK MAJ	M2W
MOLINO OY	PIK 20
MONOCOUPÉ	90AF
MOONEY	M18C, M20, M20A, M20B
MORANE SAULNIER	MS880B, MS893E
MORRISEY SHINN (amended 2006/06/30)	2150-A (amended 2006/06/30)
MUDRY	CAP 10B
PETERSON	J4
PEZETEL	KR 03A
PEZETEL	SZD 36A, SZD 41A, SZD 48 1, SZD 50 3, SZD 55 1, SZD 59
PILATUS	B4PC11, B4PC11AF
PIPER	J2
PIPER	J3, J3C, J3C50, J3C65, J3C65S, J3F50, J3F60, J3F65, J3L65
PIPER	J4A, J4E
PIPER	J5A, J5C
PIPER	L4B
PIPER	PA11, PA11S
PIPER	PA12, PA12S
PIPER	PA14
PIPER	PA15
PIPER	PA16, PA16S
PIPER	PA17

MAKE/TYPE	MODEL NUMBER/N° DE MODÈLE
PIPER	PA18, PA18 105, PA18 125, PA18 135, PA18 150, PA18A, PA18A 150, PA18AS 150, PA18S, PA18S 105, PA18S 135, PA18S 150
PIPER	PA20, PA20 115, PA20 135, PA20 150, PA20S, PA20S 135
PIPER	PA22, PA22 108, PA22 135, PA22 150, PA22 160, PA22S 150, PA22S 160
PIPER	PA28-140, PA28-151, PA 28-160, PA28-180 (amended 2007/11/15)
PITTS	S1S, S1T, S2A
PORTERFIELD	CP65
REARWIN	185
REPUBLIC	RC-3
ROLLADEN SCHNEIDER	LS 1C, LS 4, LS 6B
SCHEIBE	BERGFALKE II, II/55
SCHEIBE	BERGFALKE III
SCHEIBE	L SPATZ III, L SPATZ 55
SCHEIBE	SF 26A, 27A
SCHEIBE	ZUGVOGEL IIIB
SCHEMP-PHIRTH	CIRRUS
SCHEMP-PHIRTH	MINI NIMBUS B, C, HS7
SCHEMP-PHIRTH	S, SHK 1, SH1
SCHEMP-PHIRTH	STANDARD CIRRUS
SCHLEICHER	ASK 13
SCHLEICHER	ASW 12
SCHLEICHER	ASW 15, ASW 15B
SCHLEICHER	ASW 17
SCHLEICHER	ASW 19, ASW 19B
SCHLEICHER	ASW 20, ASW 20B
SCHLEICHER	ASW 24
SCHLEICHER	K7
SCHLEICHER	KA 6 CR, KA 6E
SCHLEICHER	K8B
SCHLEICHER	RHONLERCHE II
SCHNEIDER WERKE	GRUNAU GLIDER II
SCHWEIZER	SGS 1 23
SCHWEIZER	SGS 1 26, SGS 1 26A, SGS 1 26B, SGS 1 26C, SGS 1 26D, SGS 1 26E
SCHWEIZER	SGS 1 34

MAKE/TYPE	MODEL NUMBER/N° DE MODÈLE
SCHWEIZER	SGS 1 35
SCHWEIZER	SGS 1 36
SCHWEIZER	SGS 2 32
SCHWEIZER	SGS 2 33, SGS 2 33A
SCHWEIZER	SGU 1 19
SCHWEIZER	SGU 1 20
SCHWEIZER	SGU 2 22, SGU 2 22C, SGU 2 22CK, SGU 2 22E, SGU 2 22EK
SCHWEIZER	TG 3A
SCHWEIZER	TSC 1A2
SLINGSBY	43 3B (amended 2007/09/27)
START & FLUG	H101
STINSON (amended 2003/09/01)	108, 108-1, 108-2, 108-3 (amended 2003/09/01)
STINSON	HW 75, 10, 10A
TAYLORCRAFT	A
TAYLORCRAFT	BCS12D
TAYLORCRAFT	BC12 65, BC12D, BC12D 4 85, BC12D 85, BC12D1
TAYLORCRAFT	BC65
TAYLORCRAFT	BF12 65
TAYLORCRAFT	BL12 65, BL65
TAYLORCRAFT	DCO65
TAYLORCRAFT	F19, 19
TAYLORCRAFT	F21
THURSTON	TSC 1A
THURSTON	TSC 1A1
VARGA	2150A
VOLAIRE	10
WAGGON/MASCH	PHOEBUS B1, PHOEBUS C
WOLF HIRTH	DOPPEL RAAB IV

Information Notes:

The list of aircraft identified in this Appendix is established in relation to the specific make and model of the aircraft. As such, the reference to a Cessna 172 does not include a Cessna 172A.
(amended 2003/09/01)

The list of types and models of aircraft found in Appendix H was established prior to the elaboration of the eligibility criteria for a Special Certificate of Airworthiness – Owner Maintenance stipulated in paragraph 507.03(6)(e) of Standard 507. As such, some of the types and models presently on the list may not meet the eligibility criteria currently in place. Notwithstanding, all new types and models of

aircraft must meet the eligibility criteria stipulated in paragraph 507.03(6)(e) of Standard 507 prior to being added to the list.

(amended 2004/03/01)



Transport
Canada

Transports
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CARS

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***AIRWORTHINESS MANUAL CHAPTER 509 -
EXPORT AIRWORTHINESS CERTIFICATES FOR
AIRCRAFT***

Canada

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

[illegible]

[illegible]

509 - EXPORT AIRWORTHINESS CERTIFICATES FOR AIRCRAFT

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Preamble

This is a new Chapter developed in line with the *Canadian Aviation Regulations* (CARs). It replaces Subchapter 507B and AMA 507B1/A. It sets out the standards and procedures for obtaining an Export Airworthiness Certificate for a complete aircraft that is exported from Canada pursuant to Subpart 509 of the CARs.

These standards and procedures apply to the exportation of complete aircraft only. Aeronautical products, other than a complete aircraft, are not eligible for export under a certificate issued by the Minister or their representative.

PART V - AIRWORTHINESS

AIRWORTHINESS MANUAL CHAPTER 509 - EXPORT AIRWORTHINESS CERTIFICATES FOR AIRCRAFT

Information Note:

The issue of an Export Airworthiness Certificate does not constitute an authority to fly the aircraft. Procedures for obtaining a flight authority for delivery of the aircraft are contained in CAR 507.

509.01 Application

(1) This chapter prescribes the requirements for obtaining Export Airworthiness Certificates for aircraft that are exported from Canada, pursuant the provisions of CAR 509.

Information Note:

Aeronautical products, other than a complete aircraft, are not eligible for export under a certificate issued by the Minister.

(2) For the purposes of these standards the following definitions apply:

(a) "state of design" - is the state whose aviation authority issued the first type design approval for the aeronautical product. Where the responsibility for the type design has been relinquished to a holder in another state (the aviation authority of which has approved the type design and authorised the manufacture of the product), this other state becomes the state of design.

(b) "state of manufacture" - is the state in which the manufacturer's facility is located and whose civil aviation authority certifies the aeronautical product airworthy.

509.02 Application Procedures

(1) An application for an Export Airworthiness Certificate shall be submitted as soon as possible prior to the date on which the aircraft is to undergo the exportation flight.

(2) Export certification of a used aircraft will be made only where the aircraft is, within 30 days prior to the date of the application, certified by a person meeting the requirements of CAR 509.04, as conforming to the type design requirements specified in the application. Following this certification, the aircraft must be maintained in the certified condition throughout the Export Airworthiness Certificate issuance process.

(3) An application for an Export Airworthiness Certificate shall be made using form 24-0050, which can be obtained from any Transport Canada regional or district office. Details for the completion of this form are contained in Appendix A of this chapter.

(amended 1998/06/01)

(4) An application for an Export Airworthiness Certificate shall include, in addition to the information required in the application form 24-0050, the additional documents listed below:
(amended 1998/06/01)

(a) in the case of a new aircraft, that is, an aeroplane or helicopter that has never been operated pursuant to CAR Part IV, or an aircraft that has never been operated pursuant to Part VII, and that has, since its date of manufacture, been under the sole ownership of the manufacturer or a dealer authorised by the manufacturer, a statement of conformity which includes the total number of operating hours accumulated;

(b) a weight and balance report, together with an equipment list which includes the weight and moment arm of each item of equipment not forming part of the type design;

(c) current details of any temporary installations incorporated in the aircraft for delivery purposes;

(d) in the case of a used aircraft, a list of any Canadian Airworthiness Directives which have been complied with, and a list of all major modifications and major repairs which have been incorporated;

(e) in the case of an aircraft being exported to a state with which Canada has entered into an agreement that provides for export certification, a statement indicating the status of the aircraft in respect of the special requirements set out in Standard 509.03 and the pertinent documentation obtained from the importing state, except that where this documentation is part of the Type Design Data package, the statement shall provide detailed information as to the location of the relevant data; and

(amended 2001/06/01)

(f) where the importing state has not specified any special requirements, a statement by the applicant to that effect.

(amended 2001/06/01)

(5) The completed application form, and any required attachments, should be forwarded to the Transport Canada regional or district office assigned to the geographical area in which the owner of an aircraft resides or manages his business.

(6) An aircraft is considered to be in conformity to the type design shown in a type certificate issued by the Minister where, in respect of that aircraft:

(amended 2009/12/01)

(a) the aircraft conforms to the type design for which the application is being made, including its status in regard to any Airworthiness Limitations specified in that type design;

(b) the aircraft, its engines and any installed components are in compliance with all applicable Airworthiness Directives;

(c) there are no unapproved modifications and repairs incorporated on the aircraft, its engines, or any installed components that are subject to the approval requirements of CAR 571; and

(d) except as provided in (7), there is in force a Certificate of Airworthiness, or a Special Certificate of Airworthiness issued under the provisions of CAR 507.

(7) No flight authority issued pursuant to CAR 507 is required where the aircraft has been inspected and certified as meeting the requirements for the issue of a Certificate of Airworthiness or a Special Certificate of Airworthiness pursuant to CAR 507 requirements.

(8) Notwithstanding the design requirement for a new aircraft to undergo a flight test, an aircraft that has not been completely assembled and flight tested is considered to be in conformity to the applicable type design where that aircraft is newly manufactured in Canada.

509.03 Authority for Export

(1) Where the Minister agrees to issue an Export Airworthiness Certificate in respect of an aircraft being exported as conforming to a foreign airworthiness standard, the Minister is obligated to verify compliance with any special requirements contained in that foreign standard. This includes those requirements listed in Appendix B, and any additional requirements specified by the importing state as a condition of shipment at the time of export. Such additional requirements can involve, for example, markings and registration, additional copies of the export airworthiness certificate, copies of maintenance records and flight manuals, when these exist. It is the applicant's responsibility to provide the Minister with details in respect of any special requirements of the importing state.
(amended 2001/06/01)

(2) When a product does not meet the special requirements of the civil aviation authority of the importing state, a written statement will be obtained by the exporter from the civil aviation authority of the importing state indicating acceptance of the deviation. The importing state's written statement will, when applicable, accompany the application for the Export Airworthiness Certificate.

Information Note:

While the Minister will usually notify the applicable foreign civil aviation authority of the issuance of an Export Airworthiness Certificate for an aircraft, it is the responsibility of the exporter to ensure that a copy of the certificate is included for shipment with the product.

(3) Where an employee of an approved manufacturer has been granted Airworthiness Inspection Representative (AIR) delegation of authority as provided for in Chapter 505 of this manual, that delegate shall comply with the procedures for export airworthiness certification contained in this chapter.

509.04 Reserved

509.05 *Export Airworthiness Certificate Holder*
Responsibilities

(1) Pursuant to CAR 509 requirements, the owner of an aircraft for which an Export Airworthiness Certificate has been issued is responsible to forward to the importer all documents and information necessary for the proper operation of the product being exported. These documents include, as applicable:

- (a) flight manuals;
- (b) maintenance manuals;
- (c) service bulletins and assembly instructions required by the type certificate; and,
- (d) any material stipulated by the civil aviation authority of the importing state.

The documents, information, and material can be forwarded by any means consistent with the special requirements of the civil aviation authority of the importing state.

(2) Where an aircraft is being exported as a disassembled aircraft under the provisions of subsection 509.02(8) of this chapter, the holder of the Export Airworthiness Certificate shall forward the manufacturer's assembly instructions to the new owner. These instructions shall include the manufacturer's approved production flight test check form, along with additional instructions that provide sufficient detail to permit whatever rigging, alignment, and ground testing as necessary to ensure that the aircraft will conform to the approved configuration and type design when re-assembled.

Appendix A - Application for an Export Airworthiness Certificate (#24-0050)

Completion Procedures

*[Refer to subsection 509.02(3) of this standard]
(amended 2002/06/01)*

Notes:

- (i) The application for an Export Airworthiness Certificate has to be submitted as soon as possible prior to the date on which the aircraft is to undergo the exportation flight.
- (ii) Copies of the Application Form (#24-0050) are available at any Transport Canada Centre. To assist in the completion of the application form, the following information and guidance are provided:
- Mark in the appropriate box if the aircraft is new or used.
 - Complete Parts 1 and 3 only for new aircraft.
 - Complete Parts 1, 2 and 3 for used aircraft.
 - Except as otherwise stated in the following instructions, there must be an entry in all blocks.
 - Enter the file number in the file box, if known.
 - Fee box is for Department use only.

PART 1

Block 1 to Block 3

Self explanatory

Block 4

In the applicable box, check:

- “Yes” if the aircraft complies with all applicable Airworthiness Directives; or
- “No” if it does not.

If the aircraft does not comply with all applicable Airworthiness Directives, provide an explanation as to why it does not in Block 6, remarks section. Attach one or more additional sheets if more space is required.

Block 5

In the applicable box, check:

- “Yes” if the aircraft complies with all the applicable special requirements of the importing country; or
- “No” if it does not.

If the aircraft does not comply with all applicable special requirements of the importing country, provide an explanation as to why it does not in Block 6, remarks section. Attach one or more additional sheets if more space is required.

Block 6

Include in the remarks section, any deviation from the type design data, STC's, temporary installations etc. Attach one or more additional sheets if more space is required.

PART 2**Block 7**

Provide one of these elements, or both as the case may be:

- a list of Airworthiness Directives that have been complied with; or
- if the aircraft does not comply with all applicable Airworthiness Directives, include an explanation as to which Airworthiness Directives it does not comply with in Block 6, remarks section.

Attach one or more additional sheets if more space is required.

Block 8

Provide a list of approved repairs and modifications carried out on the aircraft. Attach one or more additional sheets if more space is required.

Block 9

Check the applicable box to indicate:

- whether the aircraft has been maintained in accordance with a pre-approved maintenance schedule for small aircraft [see subsections (2) and (3) of standard 625.86]; or
- if it has been maintained in accordance with maintenance schedule requiring approval, including the maintenance schedule number in the space provided.

Block 10

Provide the date of the most recent inspection.

Block 11

This block has to bear an original signature in permanent ink.

PART 3**Block 12**

This block has to bear an original signature in permanent ink. The owner or his authorized representative may sign. If the owner has authorized a representative to sign on his behalf, the authorization has to accompany the application form.

Note:

In the case of a new aircraft, the declaration signed by the applicant in Block 12 may not be signed by the person issuing the Export Airworthiness Certificate.

Sample form


 Transport
Canada

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 APPLICATION FOR AN EXPORT AIRWORTHINESS
CERTIFICATE

 DEMANDE DE CERTIFICAT DE NAVIGABILITÉ
POUR EXPORTATION

Aircraft / Aéronef: ☐ new / neuf ☐ used / usagé

Complete parts 1, 2 and 3 only for a new aircraft. - Pour un aéronef neuf, ne remplir que les parties 1 et 3.
 Complete parts 1, 2 and 3 for a used aircraft. - Pour un aéronef usagé, remplir les parties 1, 2 et 3.

Part 1 - Partie 1
 Make and address of: Nom et adresse de: (to: importer - à l'importateur) (to: Purchaser - à l'acheteur)

2. For export to: Country - Pays:

Manufacturer / Constructeur	Model / Modèle	Serial No. / N° de série	Type Certificate No. / N° certificat de type	Flight hours since: - heures de vol depuis:	
				New / en construction	Last overhaul / dernière révision majeure
Aircraft/Aéronef					
Engine(s) / moteur(s)					
Propellers / Hélices (s) installé(s)					

4. The aircraft complies with all applicable airworthiness requirements and all applicable directives. Cet aéronef est conforme à toutes les exigences de navigabilité et aux directives applicables.

☐ Yes / Oui ☐ No / Non (indicate on remarks) (indiquer dans les remarques)

5. All applicable special requirements of the exporting country have been complied with. Toutes les exigences spéciales du pays exportateur ont été satisfaites.

☐ Yes / Oui ☐ No / Non (indicate on remarks) (indiquer dans les remarques)

6. The aircraft has been maintained in accordance with: Cet aéronef a été maintenu selon:

☐ the maintenance schedule for serial aircraft (CAR 605.86) le calendrier de maintenance pour aéronefs de série (RAC 605.86)

☐ the approved maintenance schedule No. le calendrier de maintenance approuvé N°

10. Date of the most recent inspection (T-MAG) Date de la plus récente inspection (A-MAG)

11. I hereby certify (I/Je certifie) that the aircraft complies with the applicable requirements of the Canadian Aviation Regulations. Je certifie (Je certifie) que l'aéronef est conforme aux exigences applicables du Règlement de l'aviation canadien.

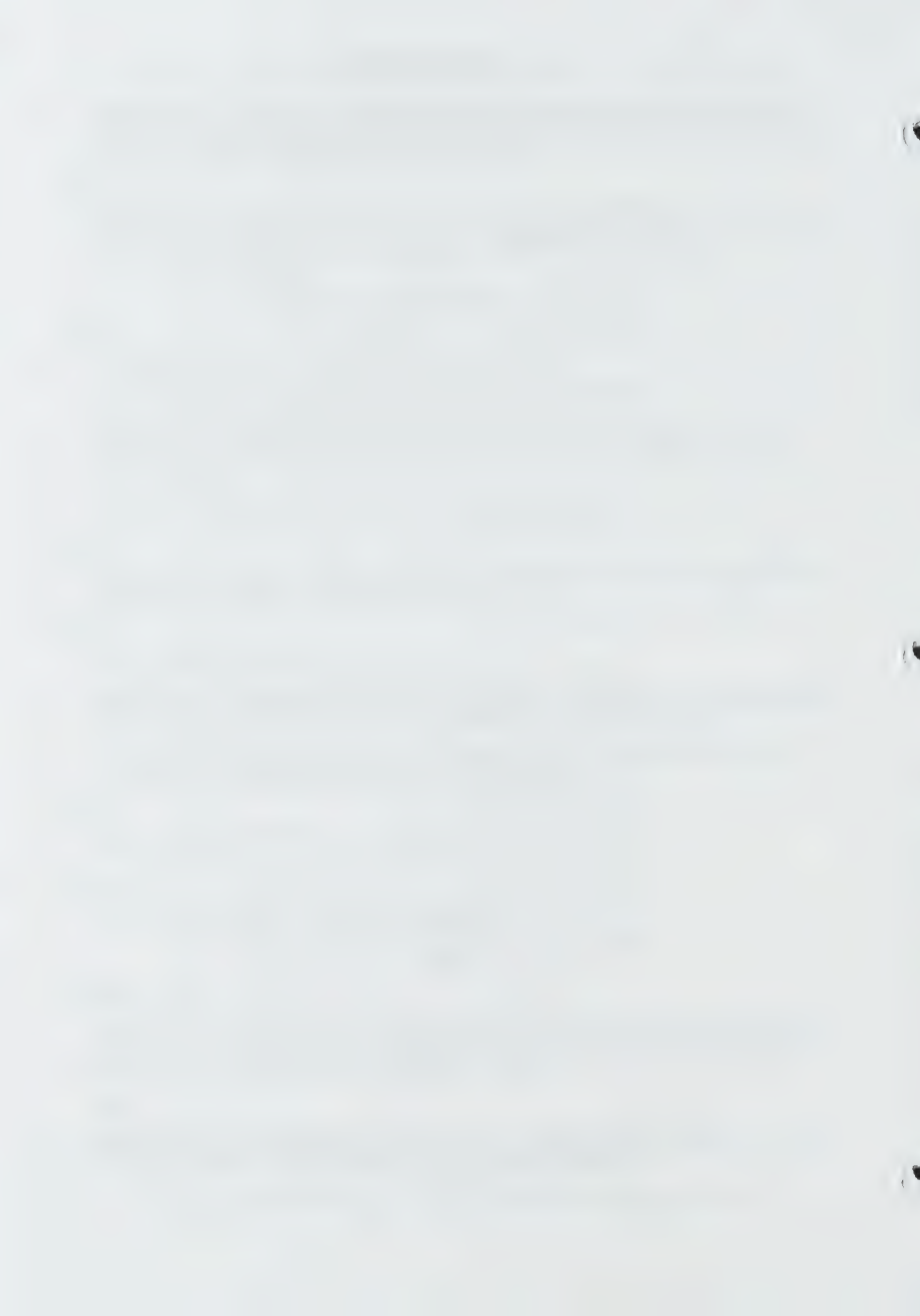
Signature / Signature: _____ Date / Date: _____

Part 3 - Partie 3: Declaration - Déclaration

I, the undersigned, declare that the information provided on this form is true and correct to the best of my knowledge. Je soussigné(e) déclare que les renseignements fournis dans ce formulaire sont vrais et exacts à la meilleure de ma connaissance.

Signature / Signature: _____ Date / Date: _____

Canada



Appendix B - Foreign Special Requirements

1. General

Information Notes:

(i) Appendix B describes the special requirements of each state with which Canada has signed an agreement for the export of aeronautical products. These special requirements are mostly administrative in nature and should be satisfied at the time of export. They involve, for example, the requirements for maintenance records, flight manuals, and other information in respect of the product being exported. Where a product does not meet a special requirement, a written statement should be obtained from the civil aviation authority of the importing state indicating that the product will be acceptable minus the special requirement. Such statements should accompany each application for export airworthiness certification.

(ii) Appendix B is based on foreign legislation and, as such, is provided for information only. Consult the nearest Transport Canada regional or district office for assistance in verifying the current status of these requirements.

(1) Where an export airworthiness certification is required for a state other than those listed in the Appendices, the general requirements will apply.

(2) The following Annexes form part of this Appendix:

(a) Annex 1 - United States of America;

(b) Annex 2 - Poland;

(c) Annex 3 - United Kingdom.

Annex 1 - United States of America

(1) Product Conformity

Aircraft manufactured in Canada to approved type design data, and exported under the provisions of the *USA/Canada Bilateral Airworthiness Agreement*, shall have been manufactured by a Transport Canada approved manufacturer and certified for conformity to type design data, approved by the FAA, and be in a fit and safe state for flight.

(2) Export Airworthiness Certification

The FAA will accept an export airworthiness certification for an aircraft when the certification attests that the aircraft:

- (a) conforms to a type design, approved by the FAA, which meets the FAA standards for airworthiness and environment as specified in the Type Certificate Data Sheet; and
- (b) is in a condition for safe operation including compliance with any applicable FAA mandatory airworthiness modifications and special inspections.

(3) Deviations from the FAA Type Design

Any deviation from the FAA type design shall be noted. However, any such deviation will eventually have to be resolved by the importer with the FAA before an aircraft is eligible for a U.S. airworthiness certificate.

(4) Products Manufactured in a Third State

In making its findings of eligibility for an aircraft manufactured in a state other than the United States or Canada, the FAA will accept a Transport Canada Airworthiness Inspector's certification for that aircraft, provided that:

- (a) both the FAA and Transport Canada have approved the basic type design of the aircraft; and
- (b) the aircraft was registered in Canada, or was in Canada for the purpose of completion (e.g. interior installation).

(5) Identification and Markings

The following identifies other special requirements which shall be complied with as a condition of acceptance by the FAA for use on U.S. registered aircraft:

- (a) Aircraft, aircraft engines and propellers shall be identified in a manner specified in FAR 45.11 with the information outlined in FAR 45.13.
- (b) Critical components to be used as spare or replacement/modification parts shall be identified with a part number and serial number.
- (c) Appliances and articles of a design approved by an FAA letter of TSO design approval shall be marked in accordance with the requirements outlined in Part 21, Subpart O, and

any additional marking requirements specified in the particular TSO.
(amended 2001/06/01)

(d) Parts and materials to be used as spare or replacement/modification parts shall be identified by a part number and the manufacturer's name or trade mark. In addition, information concerning the model designation or the type certificated product for which the part is eligible for installation shall be furnished.

(6) Maintenance Records

Each aircraft, aircraft engine, propeller, and appliance shall be accompanied by maintenance records, equivalent to those specified in FAR 91.417, that reflect the status of required inspections, life limitations, etc.

In the case of engines and propellers, each engine or propeller shall have been subjected to a final operational check to the manufacturer's specifications.

(7) Maintenance and Modifications of Products

Any maintenance or modification work performed on a U.S. registered aircraft, or any part thereof, can be certified for return to service by an aircraft maintenance engineer (AME) holding the appropriate licence and endorsements. Also, where any maintenance or modification work is performed by a Transport Canada approved organisation on an aircraft engine, propeller, or appliance which has been removed from a U.S. registered aircraft, that aircraft engine, propeller, or appliance can be released for return to service on a U.S. registered aircraft by an authorised inspector. Therefore, in neither case will an export airworthiness certification be necessary, provided the product remains under the jurisdiction of the FAA.

(8) Approved Flight Manuals, Markings and Placards

Aircraft shall be accompanied by an approved flight manual as identified on the FAA type certificate data sheet. Also the aircraft shall have the appropriate markings and placards specified in the FAA type certificate data sheet, and flight manual or manual material pursuant to FAR 91.31.

(9) Noise and Emissions Required

Aircraft shall meet the environmental standards of FAR 21.93(b), 21.183(e) or 21.185(d), SFAR 27, Part 34, Part 36, SFAR 41, or Part 91 Subpart E, as applicable

Annex 2 - Poland

(1) Product Conformity

Aircraft manufactured in Canada for export to Poland under the Bilateral Airworthiness Understanding between the Transport Canada Aviation Group (formerly CATA) and the Central Administration of Civil Aviation of the Polish People's Republic shall have been manufactured by a Transport Canada approved manufacturer and certified by Transport Canada for conformity to approved type design data, and also for meeting any applicable test and quality control requirements when formally requested by the Polish civil aviation administration.

(2) Export Airworthiness Certification

The Polish civil aviation administration will give the same validity to an export airworthiness certification as if the certification had been made under its own laws, regulations, and requirements provided that:

- (a) the aircraft conforms to design data approved by the Minister and also to any additional requirements specified by the Polish civil aviation administration;
- (b) the export airworthiness certification statement is signed by a Transport Canada representative.

Annex 3 - United Kingdom

(1) Introduction

The Technical Arrangement on Airworthiness between the Aviation Regulation Directorate, Transport Canada (TC) and the Safety Services Group, United Kingdom (U.K.) Civil Aviation Authority was signed April 27, 1987

Aircraft manufactured in Canada to approved type design data and exported under the provisions of the bilateral agreement shall be processed in accordance with the procedures given in this Annex.

(a) Administration and Procedures

- (i) The procedures which shall be followed to obtain U.K. certification are dealt with in the current issue of Section B of the *British Civil Airworthiness Requirements* (BCAR) which also prescribes the documents which shall be supplied for prototype and series aircraft.
- (ii) An Export Airworthiness Certificate (or agreed alternative) with pertinent data attached will be required in connection with any civil aircraft to be registered in the U.K.
- (iii) Where the issue of an Export Airworthiness Certificate is relevant, it shall be accompanied by a document (e.g. aircraft log book), furnished by the applicant, which contains entries identifying those applicable Airworthiness Directives (AD) and UK CAA Airworthiness Directives (CAA-AD) with which compliance has been achieved. This document shall also identify those ADs and CAA-ADs containing repetitive compliance requirements (e.g., inspection requirements for a particular component at 50-hour intervals) and when next compliance is due to be satisfied. All ADs and CAA-ADs shall have been complied with prior to issuance of the Canadian Export Airworthiness Certificate unless otherwise waived by the UK-CAA.
- (iv) The applicant for a Canadian Export Airworthiness Certificate is responsible for satisfying all U.K. Special Requirements identified in Section 2 of this Annex, as appropriate, for the particular product being exported to the U.K.

(b) Acceptance of Aircraft

- (i) In accordance with paragraph 4 of the U.K./Canada agreement, the U.K. will require that it become conversant with the design of all fixed-wing aircraft in excess of 5,700 kg (12,500 lbs.) weight intended for use in the U.K. Transport Category, the design of all aircraft exceeding 5,700 kg (12,500 lbs.) regardless of the intended certification category, and all rotorcraft offered for U.K. Certification. Additionally, in accordance with the policy declared in CAA Airworthiness Notice No. 15, the CAA can require to evaluate certain aircraft of less than 5,700 kg weight which have unusual design features. The CAA can then issue Special Conditions to cover certain features which would otherwise not meet the standards which are implicit in *British Civil Aviation Requirements* (BCAR) and the *U.K. Air Navigation Order*.

(ii) Once the U.K. standard for certification has been determined and, where necessary, U.K. Special Conditions have been issued, the U.K. will accept aircraft and rotorcraft to this standard and U.K. Special Conditions, as applicable, together with applicable ADs and U.K. equivalent retrospective requirements, while they continue in production. Modifications to the aircraft can also be made, provided the requirements used as the basis of U.K. certification are complied with, or alternatively, that the CAA agree that the modifications are acceptable.

(iii) For aircraft which are no longer in production, the CAA reserves the right to modify the basis of U.K. certification, or to refuse certification. Where U.K. certification of such aircraft is sought, reference should be made to the Civil Aviation Authority who will advise the position pertaining at the time.

(c) Acceptance of Engine, Auxiliary Power Units and Propellers

(i) In accordance with Article III of the U.K./Canada agreement, a preliminary investigation may be required to establish the standard offered for U.K. certification and, where necessary, any Special Conditions the CAA may wish to apply. In the case of turbine engines for aeroplanes, the Special Condition requirement will be limited to those arising from unusual design features in accordance with the U.K./Canada agreement.

(ii) When compliance with the U.K. standard has been established, the U.K. will accept engines (including engine modules), auxiliary power units, and propellers and parts thereof to the defined standard while they continue to be in production subject only to compliance with subsequent applicable ADs and U.K. equivalent retrospective requirements. Modification will also be accepted subject to compliance with the U.K. certification basis.

(iii) For engines, auxiliary power units, and propellers which are no longer in production, the CAA reserves the right to modify the basis of acceptance or to refuse certification.

(d) Acceptance of Appliances and Components

(i) Radio

The procedure which shall be followed to obtain U.K. acceptance of radio equipment are dealt with in the current issue of Section B, Chapter B4-10, of the BCAR.

(ii) Appliances (other than radio) as so defined in Section 3 shall be registered to obtain U.K. acceptance. The procedures which shall be followed to obtain U.K. acceptance of such appliances are dealt with in Section B, Chapter B4-8, of BCAR. An acceptable method of complying with these procedures is contained in Section 3.

(iii) Components which are produced in Canada for export and used on products which are or can be certificated or approved in the U.K. will be accepted by the CAA provided:

(1) they are properly designated; and

(2) Transport Canada, or its representative, certifies that the components conform to the applicable design data and meet the applicable test and quality control requirements which have been notified by the CAA to Transport Canada.

Information Note:

The provisions of paragraph (iii) apply to those components which are produced by a manufacturer in Canada pursuant to an agreement between the manufacturer and the product manufacturer in the U.K.

(e) Restricted Category Aircraft

(i) Application for U.K. certification of aircraft type approved in Canada in the restricted category will be considered on an individual basis.

(ii) The applicant for export certification shall furnish to the CAA, information describing how the aircraft differs from the type approval basis for a standard type approval - if standard type approval of the design has been made. The applicant shall provide evidence of compliance with this requirement, to Transport Canada or its representative, at the time of issue of the export certificate. If the applicant does not have some form of approval under the *Canadian Airworthiness Manual*, Transport Canada will verify correctness of the information and will so notify the CAA by the appropriate means.

(iii) On the basis of this evidence, the CAA will decide whether it is necessary to seek further information from Transport Canada and which, if any, of the procedures described in paragraphs (i) and (ii) above shall be invoked.

(2) Special Requirements

The following identifies those special administrative requirements which shall be satisfied at the time of export (in addition to any U.K. Special Conditions) for a particular product to be eligible for U.K. registration, certification and/or airworthiness validation.

(a) All Aircraft

(i) Statement of Build Standard * is to include the aircraft specification, changes in design (as required by U.K. Special Conditions) and a list of Service Bulletins incorporated in order to identify:

- (1) production versions of the Service Bulletin;
- (2) Service Bulletin compliance;
- (3) Alert Service Bulletin compliance.

(ii) Modification Standard shall include:

- (1) customer incorporated options;
- (2) equipment incorporated, including items of equipment not necessarily installed by the manufacturer;

(3) Service Bulletin compliance;

(4) Alert Service Bulletin compliance.

(iii) Export Airworthiness Certification

The Canadian Export Airworthiness Certificate shall list the status of compliance with U.K. Special Conditions including, by issue and date, those which have been complied with and those which have not. Accordingly, the following information should be noted on the Canadian Export Airworthiness Certificate when issued for any aircraft to which the U.K. Special Conditions are applicable;

(1) The date and issue number of the U.K. Special Conditions which have been complied with;

(2) The list of Special Condition numbers that have been complied with;

(3) The list of Special Condition numbers that have not been complied with.

Information Note:

Non-compliance with any U.K. Special Condition would not require a waiver from the U.K. nor preclude the issuance of a Canadian Export Airworthiness Certificate since the U.K. is primarily concerned with the status of compliance.

(iv) Airworthiness Directives

A declaration of compliance with all ADs issued by Transport Canada shall be provided. Where optional means of compliance are offered, the means chosen shall be stated. There shall also be a declaration of compliance with CAA *Airworthiness Directives* (available at Transport Canada regional offices).

(v) A copy of the aircraft type approval plus any applicable supplemental type approvals (STA). The STAs will be subject to CAA evaluation if not previously investigated *.

(vi) A list of defects to be rectified by the U.K. operator at the time of issue of the Export Airworthiness Certificate, if any.

(vii) Engine/Airframe/Auxiliary Power Unit logbooks.

(viii) Seating configuration approval document, where appropriate **.

(ix) Maintenance Review Board program, where applicable ***.

(x) Time/Life limitations.

(xi) Electrical load analysis *.

(xii) Minimum equipment list*.

(xiii) Wiring diagram *.

(xiv) Weight schedule and weighing report.

(xv) Manuals:

	Name	Number Required
(1)	Flight Manual or Pilot Operating Handbook *	5 (+1 per aircraft)
(2)	Maintenance *	2
(3)	Operations *	2
(4)	Weight and Balance Loading Procedures *	1
(5)	Overhaul *	2
(6)	Structural Repair *	2
(7)	Component Overhaul *	2
(8)	Engine Maintenance & Overhaul *	2
(9)	Standard Practices *	2
(10)	Nondestructive Testing *	2
(11)	Structurally Significant Items *	1
(12)	Maintenance Planning Guide *	1
(13)	Parts Catalog *	2

(xvi) Record of Compass System and Magnetic Compass Swings.

(xvii) Record of rigging checks.

(xviii) Detailed list of radio equipment constituting the radio station.

(xix) Antenna performance patterns, when available.

(xx) List of serial numbers of significant component parts.

(b) Used Aircraft

In addition to the information referred to in Section 2, paragraph (a), the following is also required for used aircraft:

(i) The maintenance program to which these aircraft have previously been maintained including **:

(1) Previous check cycle;

(2) Future check cycle.

(ii) Component overhaul life summary, including details of service life remaining and modification standards **.

(iii) Compliance with structural inspection program. Provide details of any structural sampling program in which these aircraft have been included, together with details of their position in the program **.

NOTES :

- * *Required only with the first aircraft of a particular type and model exported to the U.K.*
- ** *Normally only required for aircraft over 2,730 kg (6,019 lbs.) in Transport Category.*
- *** *Both of the foregoing apply.*

CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***AIRWORTHINESS MANUAL CHAPTER 511
- APPROVAL OF THE TYPE DESIGN OF AN
AERONAUTICAL PRODUCT
- DELETED
(2009/12/01)***

Canada

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CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***AIRWORTHINESS MANUAL CHAPTER 513
- APPROVAL OF MODIFICATION AND REPAIR DESIGNS
- DELETED
(2009/12/01)***

Canada 

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CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***AIRWORTHINESS MANUAL CHAPTER 516 -
AIRCRAFT EMISSIONS***

Canada

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

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AIRWORTHINESS MANUAL CHAPTER 516 - AIRCRAFT EMISSIONS

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Procurement of Reference Publication

The titles of the publications referenced in this Chapter of the *Airworthiness Manual* are as follows:

International Standards and Recommended Practices - Environmental Protection, Annex 16 to the Convention on International Civil Aviation:

- Volume I, Aircraft Noise,
- Volume II, Aircraft Engine Emissions.

Orders for these publications may be sent to the following address, together with the appropriate remittance:

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Preamble

First Edition

Effective: 30 November 1985

This chapter incorporates by reference Chapters 2, 3, 5 and 6 of Annex 16 to the Convention on International Civil Aviation entitled "Environmental Protection", Volume I, "Aircraft Noise", as amended by Amendment 1 dated 24 November 1983, published by the International Civil Aviation Organization (ICAO).

Amendment 1 to Volume I incorporates the Introduction of SARPs for noise abatement operating procedures and transfer of detailed procedures to PANS-OPS, Volume I.

Change 516-01

Effective: 10 August 1987

This change incorporates by reference the standards of Chapter 8 of ICAO Annex 16, Volume I, as amended by Amendment 2, for the noise certification of helicopters, and also the amendments to Chapters 5 and 6 of that document containing the standards for propeller-driven commuter category aeroplanes.

The content of this change was subjected to consultation with appropriate industry associations and received general acceptance (NPA 87-01).

Amendment 2 to Volume I incorporates:

- a) improvements in the noise certification procedures; and
- b) relaxation of maximum noise limits for helicopters

Note: In 516-1 changes were identified by marginal black lines. In future, changes will be identified by brackets []; editorial alterations and typographical corrections will not be identified.

Change 516-02

Effective: 30 November 1988

This change incorporates by reference the standards of Chapter 10 of ICAO Annex 16, Volume I, as amended by Amendment 3, for the noise compliance certification of propeller-driven aeroplanes not exceeding 9 000 kg, and any changes resulting from adoption of ICAO Amendment 3 to Annex 16, Volume I.

The content of this change was subjected to consultation with appropriate industry associations and received general acceptance (NPA 88-02).

Amendment 3 to Volume I incorporates:

- a) further improvements in the noise certification procedures;
- b) introduction of a new Chapter 10 for propeller-driven aeroplanes not exceeding 9 000 kg maximum certificated takeoff mass; and
- c) editorial changes in Part V cross-referencing the relevant provisions in the PANS-OPS (Doc 8168).

**Chapter 516, 2nd Edition
(renamed Change 516-03)**

Effective: 1 November 1991

The first edition of Chapter 516, effective Nov. 30, 1985, contained aircraft noise standards, based on the International Standards and Recommended Practices of Annex 16, Volume I to the Convention on International Civil Aviation, which were incorporated by reference. The chapter was subsequently amended in 1987 and 1988. While the title and the requirements of the first edition are maintained unchanged in Subchapter A of this second edition, the presentation and the wording are changed for consistency with the new Subchapter B.

In 1986, at the time of the publication of Chapter 516, the engine emission standards of Annex 16, Volume II were not adopted due to controversial interpretations of the *Aeronautics Act*. The Department of Justice has reviewed the issue and has concluded that, under the provisions of paragraph 4.9 (b) of the *Aeronautics Act*, the Department of Transport has the power to regulate aircraft engine emissions. Accordingly, following consultation with the Canadian aviation industry and the Department of Environment, the Department of Transport has adopted the aircraft engine emissions standards of Volume II of Annex 16 to the Convention on International Civil Aviation, First edition, 1981, published by the International Civil Aviation Organization (ICAO). These standards are published in the new Subchapter B.

The adoption of the standards of Annex 16, Volume II has required significant editorial changes to the first edition. Therefore, Chapter 516 is reissued in its entirety, and its title is changed to "Aircraft Emissions". In the Canadian context, environmental protection is the responsibility of the Department of Environment and, while the standards of this chapter will have an ultimate environmental effect, the authorization in paragraph 4.9 (b) of the *Aeronautics Act* is to regulate the design of aeronautical products. Therefore, the title "Aircraft Emissions" has been found more appropriate than "Environmental Protection", which is the title given to ICAO Annex 16.

The content of this change was subjected to consultation with appropriate industry associations and received general acceptance (NPA 91-14).

**Chapter 516, 2nd Edition-1
(renamed Change 516-04)**

Effective: 11 November 1993

This change incorporates by reference, Amendment 4 and Amendment 2 to Volume I "Aircraft Noise", and Volume II "Aircraft Engine Emissions" respectively of Annex 16 to the Convention on International Civil Aviation. These amendments arise from the recommendations of the second meeting on the Committee on Aviation Environmental Protection (CAEP/2) held in December 1991.

Amendment 4 to Volume I incorporates:

- a) improvements in the noise certification procedures;
- b) introduction of a new Chapter 11 for light helicopters;
- c) expansion of Appendix 2 to include helicopters and replacement of Appendix 4; and
- d) introduction of guidance on applicability.

Amendment 2 to Volume II incorporates;

a) increased stringency of No_x emissions limits;

b) improvements in the smoke and gaseous emissions certification procedure.

**Chapter 516, 2nd Edition-2
(renamed Change 516-05)**

Effective: 8 February 1998

The publication and release of this Change 2 to the 2nd Edition, follows the completion of CARAC NPA 97-451 process, dated 17 November 1997.

This change incorporates by reference, Amendment 5 to Volume I "Aircraft Noise", of Annex 16 to the Convention on International Civil Aviation. This amendment is the result of recommendations of the third meeting on the Committee on Aviation Environmental Protection (CAEP/3) held in December 1995.

For consistency with the new *Canadian Aviation Regulations*, references to Air Regulation 214, have been replaced with references to the *Canadian Aviation Regulations*, Part V, Subpart 11. Also the term "type approval" has been replaced with "type certificate".

Amendment 5 to Volume I incorporates:

a) simplification and clarification of the noise certification schemes in Chapter 3 for propeller-driven aircraft;

b) harmonization of the helicopter Standards in Chapters 8 and 11 with national codes; and

c) alignment of the take-off mass in Chapter 10 with airworthiness limits.

Note: Due to an administrative oversight, change 516 (2nd Edition)-2 (renamed 516-05) of AWM Chapter 516 adopted ICAO Annex 16, Volume II, Amendment 3, without prior consultation. To correct the error, ICAO Annex 16, Volume II, Amendment 3, has been included in NPA 1999-169 and incorporated at Change 516-06.

Change 516-06

Published: 1 September 2001

1. General

This change incorporates by reference ICAO Annex 16 amendment 6 to Volume I, and Amendments 3 & 4 to volume II. The contents of these amendments are summarized below, and were the subject of the formal adoption process with appropriate industry associations and received CARAC acceptance.

2. ICAO Annex 16 Amendments

This change incorporates by reference the technical standards contained in the following amendments to ICAO Annex 16 resulting from the recommendations of the Fourth Meeting of the Committee on Aviation Environmental Protection (CAEP/4) held in April 1998.

Volume I - Amendment 6

Effective: 23 November 1999

This amendment introduces an increase in stringency of Annex 16, Volume I, Chapter 10 noise requirements for single-engine light propeller-driven aeroplanes; changes of a generally

minor nature that are intended to improve the consistency of the Annex and reflect changes that had arisen from the on-going harmonization of the European Joint Aviation Regulations (JARs) and the United States Federal Aviation Regulations (FARs). The opportunity has also been taken to introduce a number of required editorial corrections amendments to the Annex; and introduces a definition of human performance in Part I and new provisions concerning human factors in Part V (NPA 1999- 169).

Volume II - Amendment 3

Effective: 23 November 1999

This amendment changes the criteria on calibration and test gases in Appendices 3 and 5 (NPA 1999- 169).

Volume II - Amendment 4

Effective: 23 November 1999

This amendment introduces a new paragraph “c” into Part III, Chapter 2, section 2.3.2 - Regulatory Levels. Paragraph ‘c’, lowers the emissions limits of the oxides of nitrogen (No_x) and is applicable to engines for which the date of manufacture of the first production model is after 31 December 2003 (NPA 1999- 169).

Change 516-7

Published: 1 June 2005

1. General

This change incorporates by reference ICAO Annex 16 amendment 7 to Volume I. The content of this amendment is summarized below, and were the subject of the formal adoption process with appropriate industry associations and received CARAC acceptance.

2. ICAO Annex 16 Amendments

This change incorporates by reference the technical standards contained in the following amendments to ICAO Annex 16 resulting from the recommendations of the Fifth Meeting of the Committee on Aviation Environmental Protection (CAEP/5) held in January 2001.

Volume I – Amendment 7

Effective: 6 August 2003

This amendment introduces an increase in stringency of the turbo jet and heavy propeller-driven aeroplane noise requirements (new Chapter 4 – existing Chapter 4 becomes Chapter 12); new provisions relating to the re-certification of Chapter 3 aeroplanes; increase in stringency of the helicopter noise requirements of Chapter 8 and 11; change to clarify or redefine existing certification procedures, align with harmonized JAR/FAR requirements, introduce new provisions relating to digital instrumentation.

Change 516-8

Published: June 30, 2007

1. General

This amendment adopts by reference ICAO Annex 16 amendment 8 (4th Edition) to Volume I and ICAO Annex 16 amendment 5 to Volume II. The content of this amendment is summarized below and is adopted in accordance with the CARAC simplified process for the amendment of design standards.

2. ICAO Annex 16 Amendments

This change incorporates by reference the technical standards contained in the following amendments to ICAO Annex 16 resulting from the recommendations of the Sixth Meeting of the Committee on Aviation Environmental Protection (CAEP/6) held 2-12 February 2004.

Volume I – Amendment 8

Effective: March 8, 2007

This amendment introduces: ambient noise correction procedure including definitions for "background noise", "ambient noise" and "broadband noise"; allowable wind speed limits during testing; applicability language clarification including temporary changes in type design and provisions to allow the recertification of Chapter 5 aeroplanes to Chapter 4; rotorcraft-related technical issues; and new Attachments G and H containing guidelines for the administration of noise certification documentation and guidelines for obtaining helicopter noise data for land-use planning purposes, respectively (NPA 2006-008).

Volume II – Amendment 5

Effective: March 8, 2007

This amendment introduces an increase in stringency of the NO_x emissions Standards (NPA 2006-037).

Change 516-9

Published: December 1, 2009

On December 1, 2009, Part V Subpart 21 of the *Canadian Aviation Regulations* (CAR 521) came into force. CAR 521 replaces the following Regulations in Part V—Airworthiness:

Subpart 11 - Approval of the Type Design of an Aeronautical Product

Subpart 13 - Approval of Modification and Repair Designs

Subpart 16 - Aircraft Emissions

Subpart 22 - Gliders and Powered Gliders

Subpart 23 - Normal, Utility, Aerobatic and Commuter Category Aeroplanes

Subpart 25 - Transport Category Aeroplanes

Subpart 27 - Normal Category Rotorcraft

Subpart 29 - Transport Category Rotorcraft

Subpart 31 - Manned Free Balloons

Subpart 33 - Aircraft Engines

Subpart 35 - Aircraft Propellers

Subpart 37 - Aircraft Appliances and Other Aeronautical Products

Subpart 41 - Airships

Subpart 51 - Aircraft Equipment

Subpart 91 - Service Difficulty Reporting

Subpart 93 - Airworthiness Directives

In addition, with publication of CAR 521, the following Chapters of the Airworthiness Manual have been withdrawn:

Chapter 511 - Approval of the Type Design of an Aeronautical Product

Chapter 513 - Approval of Modification and Repair Designs

Standard 591 - Service Difficulty Reporting

Standard 593 - Airworthiness Directives

This change amends sections 516.1, 515.3, 516.101, 516.103 and 516.107 to reflect changes in legal drafting style, in terminology and in references required because of the introduction of CAR 521. In addition, section 521.32 of the CARs is now used to legally enable this Chapter of the AWM.

Change 516-10

Published: December 1, 2010

1. General

This amendment adopts by reference ICAO Annex 16 amendment 9 (5th Edition) to Volume I and ICAO Annex 16 amendment 6 to Volume II. The content of this amendment is summarized below and is adopted in accordance with the CARAC simplified process for the amendment of design standards.

2. ICAO Annex 16 Amendments

This change incorporates by reference the technical standards contained in the following amendments to ICAO Annex 16 resulting from the recommendations of the Seventh Meeting of the Committee on Aviation Environmental Protection (CAEP/7) held 7 March 2008.

Volume I - Amendment 9

Effective: May 27, 2010

This amendment introduces: new text to Attachment H containing guidelines for obtaining helicopter noise data for land-use planning purposes by providing the option for additional microphone positions; a change to Note 2 of the definition of “derived version of a helicopter” to clarify that it applies to Chapter 11 as well as Chapter 8 helicopters; noise certification procedures for helicopters amended to ensure that the maximum operational rotor speed will be used; clarification of the definitions relating to wind speeds during tests; an update of the International Electrotechnical Commission (IEC) references; a clarification regarding the increment to be added to the V_2 speed to determine the climb speed to be used during certification training; an amendment of the applicability provisions to align them with similar provisions in other ICAO documents; minor editorial changes. (NPA 2009-021)

This amendment introduces: a clarification of applicable corrections to reference day and reference engine conditions and of the humidity terminology used; amendments allowing the use of test fuels outside those specified with certificating authority approval; standardization of terminology relating to thrust setting; clarification of the appropriate value of fuel flow to be used at each LTO point; amendments to the requirements specifying the materials that may be used in sampling rates. (NPA 2009-021)

PART V - AIRWORTHINESS

(2001/09/01)

AIRWORTHINESS MANUAL CHAPTER 516 - AIRCRAFT EMISSIONS

SUBCHAPTER A AIRCRAFT NOISE

516.1 *General*

(a) This subchapter sets out noise standards for subsonic turbo-jet and propeller-driven aeroplanes and helicopters.

(amended 2009/12/01)

(b) Reserved.

(amended 2009/12/01)

(2nd Edition, Change 2 (98-02-08))

516.3 *Interpretation*

In this subchapter,

(a) "Annex 16, Volume I" means Annex 16 to the Convention on International Civil Aviation, Volume I entitled "Environmental Protection - Aircraft Noise", Fifth Edition - July 2008, including Amendments 1 to 9 published by the International Civil Aviation Organization (ICAO).

(amended 2010/05/27)

(b) The words "type certificate" must be substituted for the words "certificate of airworthiness for the prototype", wherever they appear in the publications referenced in sections 516.5 and 516.7.

(amended 2009/12/01)

Information Notes:

(i) *For the purpose of determining the applicable noise standards, the applicability dates are the dates set out in Chapter 1 of Annex 16, Volume I, Part II.*

(amended 2009/12/01)

(ii) Unless otherwise defined in Chapter 500 of the AWM, the definitions contained in Annex 16, Volume I, Part I, apply.

(amended 2009/12/01)

(2nd Edition (93-11-11))

(2nd Edition, Change 2 (98-02-08))

(Change 516-06 (99-11-23))

516.5 Noise Emission Standards

Subject to the changes specified in paragraph 516.3(b), the standards related to aircraft noise emission are those contained in the following Chapters of Annex 16, Volume I, Part II:

(a) **Chapter 2**, entitled “Subsonic jet aeroplanes - Application for certificate of airworthiness for the prototype accepted before 6 October 1977”.

(b) **Chapter 3**, entitled:

“1. Subsonic jet aeroplanes - Application for certificate of airworthiness for the prototype accepted on or after 6 October 1977 and before 1 January 2006”.
(amended 2003/08/06)

“2. Propeller-driven aeroplanes over 5700 kg - Application for certificate of airworthiness for the prototype accepted on or after 1 January 1985 and before 17 November 1988”.

“3. Propeller-driven aeroplanes over 8618 kg - Application for certificate of airworthiness for the prototype accepted on or after 17 November 1988 and before 1 January 2006”.
(amended 2003/08/06)”.

(c) **Chapter 4**, entitled:

(amended 2003/08/06)

“1. Subsonic jet aeroplanes - Application for certificate of airworthiness for the prototype accepted on or after 1 January 2006”.
(amended 2003/08/06)

“2. Propeller-driven aeroplanes over 8618 kg - Application for certificate of airworthiness for the prototype accepted on or after 1 January 2006”.
(amended 2003/08/06)

(d) **Chapter 5**, entitled “Propeller-driven aeroplanes over 5700 kg - Application for certificate of airworthiness for the prototype accepted before 1 January 1985”.

(e) **Chapter 6**, entitled “Propeller-driven aeroplanes not exceeding 8618 kg- Application for certificate of airworthiness for the prototype accepted before 17 November 1988”.

(f) **Chapter 8**, entitled “Helicopters”.

(g) **Chapter 10**, entitled “Propeller-driven aeroplanes not exceeding 8618 kg - Application for certificate of airworthiness for the prototype or derived version accepted on or after 17 November 1988”.

(h) **Chapter 11**, entitled "Helicopters not exceeding 3175 kg maximum certificated take-off mass".

(amended 2003/08/06)

(2nd Edition (93-11-11))

516.7 Noise Evaluation Methods

Subject to the changes specified in paragraph 516.3(b), the methods for the evaluation of aircraft noise are those contained in the following Appendices of Annex 16, Volume I:

(a) **APPENDIX 1**, entitled "Evaluation method for noise certification of subsonic jet aeroplanes - Application for certificate of airworthiness for the prototype accepted before 6 October 1977".

(b) **APPENDIX 2**, entitled "Evaluation method for noise certification of:"

"1. Subsonic jet aeroplanes - Application for certificate of airworthiness for the prototype accepted on or after 6 October 1977."

"2. Propeller-driven aeroplanes over 5700 kg - Application for certificate of airworthiness for the prototype accepted on or after 1 January 1985 and before 17 November 1988."

"3. Propeller-driven aeroplanes over 8618 kg - Application for certificate of airworthiness for the prototype accepted on or after 17 November 1988."

"4. Helicopters."

(2nd Edition (93-11-11))

(c) **APPENDIX 3**, entitled "Noise evaluation method for noise certification of propeller-driven aeroplanes not exceeding 8618 kg - Application for certificate of airworthiness for the prototype accepted before 17 November 1988."

(d) **APPENDIX 4**, entitled "Evaluation method for noise certification of helicopters not exceeding 3175 kg maximum certificated take-off mass."

(amended 2003/08/06)

(e) **APPENDIX 6**, entitled "Noise evaluation method for noise certification of propeller-driven aeroplanes not exceeding 8618 kg - Application for certificate of airworthiness for the prototype accepted on or after 17 November 1988".

(f) **APPENDIX 7**, deleted.

(2nd Edition (93-11-11))

(2nd Edition, Change 2 (98-02-08))

SUBCHAPTER B AIRCRAFT ENGINE EMISSIONS

516.101 *General*

(a) This subchapter sets out standards related to:
(amended 2009/12/01)

(1) The prevention of intentional fuel venting of turbine-engine powered aircraft; and
(amended 2009/12/01)

(2) Aircraft engine emissions consisting of smoke and gaseous emissions of turbo-jet and turbofan engines intended for propulsion at subsonic or supersonic speeds, as applicable.
(amended 2009/12/01)

(b) Reserved.
(amended 2009/12/01)

(2nd Edition, Change 2 (98-02-08))

516.103 *Interpretation*

In this subchapter,

(a) "Annex 16, Volume II" means Annex 16 to the Convention on International Civil Aviation, Volume II entitled "Environmental Protection - Aircraft Engine Emissions", Third Edition - July 2008, including Amendments 1 to 6 published by the International Civil Aviation Organization (ICAO).
(amended 2010/05/27)

(b) The words "type certificate" must be substituted for the words "type certificate of the first basic type", wherever they appear in the publications referenced in sections 516.105, 516.107 and 516.109.
(amended 2009/12/01)

Information Note:

Unless otherwise defined in Chapter 500 of the AWM, the definitions and symbols contained in Annex 16, Volume II, Part I, apply.
(amended 2009/12/01)

(2nd Edition (93-11-11))

(2nd Edition, Change 2 (98-02-08))

(Change 516-06 (99-11-23))

516.105 *Vented Fuel Standards*

The standards related to the prevention of intentional fuel venting are those contained in Annex 16, Volume II, Part II "Vented Fuel".

516.107 *Aircraft Engine Emission Standards*

The standards related to aircraft engine emissions consisting of smoke and gaseous emissions are those contained in Annex 16, Volume II, Part III "Emissions Certification", as follows:

(amended 2009/12/01)

(a) **CHAPTER 2**, entitled "Turbojet and turbofan engines intended for propulsion only at subsonic speeds"; and

(b) **CHAPTER 3**, entitled "Turbojet and turbofan engines intended for propulsion at supersonic speeds".

516.109 *Aircraft Engine Emission Evaluation Methods*

The methods for the evaluation of aircraft engine emissions are those contained in Annex 16, Volume II, Appendices 1 through 6 inclusive.



Transport
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TP 6197 E

CARs

CANADIAN AVIATION REGULATIONS

PART V - AIRWORTHINESS

***AIRWORTHINESS MANUAL CHAPTER 522 -
GLIDERS AND POWERED GLIDERS***

Canada

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NOTE

All amendments to the CARs will be indicated by the Coming into Force date, immediately following the amended text.

RECORD OF AMENDMENTS

[illegible]

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AIRWORTHINESS MANUAL CHAPTER 522 - GLIDERS AND POWERED GLIDERS

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Preamble

General

The content of this chapter of the Airworthiness Standards is based on the Joint Aviation Requirements, JAR-22 entitled “Gliders and Powered Gliders”. These JAR airworthiness standards have been used and adapted as the model for the Canadian standards supplemented by additional airworthiness requirements based on operational experience and environmental conditions in Canada.

Format

The standards in this chapter are presented in a two-column format with the JAR presented in the left column and the Canadian standards in the right column. Chapters, subchapters, sections and subsections numbering and headings are opposite to the equivalent JAR. Where the Canadian standard is identical to the JAR, the words “No Variation” appear; where a variation exists, the affected part of text is printed opposite to the JAR with all changes underlined.

The JAR numbering system is used; the Canadian standards bears the same number as the JAR equivalent, prefixed by the number “5”, as this chapter forms part of Series 5 of the Canadian Aeronautics Code.

P Subchapters E (Powerplants), H (Engines) and J (Propellers) are applicable only to Powered Gliders. Where requirements in other subchapters are applicable only to Powered Gliders, they are identified in the margin by a vertical line and the letter P.

First Edition

Effective: January 2, 1986

The content of this chapter is based on the Joint Aviation Requirements, JAR 22, “Gliders and Powered Gliders”, as amended to and including Amendment 3, effective January 31, 1983, published by the government of the United Kingdom on behalf of the Joint Aviation Authorities Steering Committee.

In addition to administrative changes (e.g. type certificate = type approval; Part = Chapter), the following Canadian variations based on FAA AC 21.17-2, dated July 13, 1989 were included:

- | | |
|--------------------|---|
| 522.1(a)(2) | Maximum weight now 909 kg, was previously 850 kg. |
| 522.143(d) | Transition from powered flight to gliding should not require exceptional piloting skill. |
| 522.147 | For powered gliders, directional and lateral control should be accomplished without significant sideslip or skid. |
| 522.177(b) | Control force reversal in a sideslip should not require exceptional piloting skill. |
| 522.207(b) and (e) | A powered glider must have a clear and distinct stall warning. |
| 522.1303 | All gliders, powered and unpowered, require a magnetic compass, airspeed indicator and an altimeter. |

- 522.1545(a) Airspeed indicator must have means to indicate V_{NE} at any altitude.
- 522.1581(d) and Use of metric units and reference to operating rules in the Flight Manual.
(e)

Change 522-1

Effective: August 31, 1987

This change incorporates:

Change 4 to JAR-22 published by the Joint Aviation Authorities Steering Committee on May 7, 1987, which includes the following JAR 22 amendments:

- Amendment 22/84/1
- Amendment 22/85/1
- Amendment 22/86/1; and
- Canadian variations to section 522.1303, paragraph (a)(3), which requires either a magnetic compass or a magnetic direction indicating system.

Note: In 522-1 changes are identified by marginal black lines. In future, changes will be identified by brackets []; editorial alterations and typographical corrections will not be identified.

Change 522-2

Effective: June 30, 1993

This change incorporates the following amendments to JAR 22, published as "Orange Pages" by the Joint Aviation Authorities (JAA):

- Amendment 22/90/1: includes changes to standards and advisory material affecting: spinning and spin recovery requirements, design loads for the installation and analysis of winglets, combined loads for tail surfaces, launching hook design, location, accessibility and unobstructed motion of controls, emergency exit of cockpit, powerplant extension and retraction speed, and data to be furnished in the Flight Manual. Because of this amendment, the Canadian variation 522-1581 (d) and (e) were renumbered (c) and (d).
- Amendment 22/91/1: includes changes to standards and advisory material affecting: definition and limitation of self-sustaining powered gliders and a higher stalling speed (90 km/h) for gliders with retracted airbrakes and maximum water ballast weight. V_s is amended to become V_{s1} , which is defined. A new paragraph on fuel tank expansion space is added. Other changes deal with battery cables and digital solid state displays.
- Amendment 22/92/1: adds new advisory material (ACJ) to the list of AMA 522/1.

This change also includes the rewriting of the original "Introduction" and "Foreword" in the form of "Preamble" and the issue of Revision B of AMA 522/1.

Change 522-3**Effective: April 30, 1994**

The First Edition of this Chapter included some Canadian variations which mostly originated from FAA AC 21.17-2. In the reissue "A" of this AC, dated February 10, 1993 some of the additional FAA requirements were withdrawn.

To achieve greater international harmonization some of the original differences are revoked by this change, as follows:

- The variation of paragraph 522.1(a)(2) is revoked, hence the maximum weight for powered gliders is reduced from 909 kg to 850 kg, as it is in JAR 22, and FAA AC 21.17-2;
- The variations of paragraphs 522.143(d) and 522.177(b)(1) to (b)(4) were deleted to harmonize with the amendment to FAA AC 21.17-2;
- The requirement of 522.177(b)(5), which originated from FAR, section 23.177, is revoked;
- The variation in section 522.1303 is deleted because the requirement is contained in ANO, Series II, No. 19, section 2(a), and the JAR 22 text is adopted;
- The variation in section 522.1545(a) is deleted, and the original text of JAR 22.1581 is made applicable;
- Paragraph 522.1581 (c)(3) is deleted, because the requirement is presently included in the text of the introductory paragraph.

In addition, the Preamble to change 522-2 has been corrected for completeness and clarity, and several editorial corrections to the existing text have been made.

Change 522-4**Published: June 30, 2007**

In accordance with the CARAC simplified process for the amendment of design standards, this change incorporates JAR 22 Change 5 and Amendment 6, as published by the Joint Aviation Authorities prior to the creation of the European Aviation Safety Agency (EASA). As described below, this amendment also deletes three Canadian variations and adds one variation.

This change incorporates the following amendments:

JAR-22 Change 5**Effective: November 25, 2000**

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2000-242	<ul style="list-style-type: none">• 522.51(a),(b)• 522.65(a)• 522.73(a),(b)• 522.145(c)(2)• 522.611(a),(b),(c)• 522.777(a),(b),(d)

Table of Change Information	
Notice of Proposed Amendment	Amended Section
	<ul style="list-style-type: none"> • 522.779 • 522.1322 • 522.1523 • 522.1545(a) • 522.1583(j) • 522.1585(f),(h),(i),(j)

This amendment adopts JAR-22 Orange Paper Amendment 22/94/1 into the standards of AWM Chapter 522 for gliders and powered gliders. With the exception of existing Canadian variations, this amendment reflects the requirements published in JAR-22 Change 5, dated 28 October 1995.

Note: JAR 22.821 was not applicable in Canada, hence no change to Chapter 522 is required as a result of JAA NPA 22D-66 (Deletion of Dutch National Variant in JAR 22.821).

Deletion of Canadian Variation 522.147

Effective: December 13, 2000

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2000-342	• 522.147

This amendment deletes the Canadian variation to JAR-22 paragraph 22.147, harmonizing this requirement.

Deletion of Canadian Variation 522.1581(c)(2), (d)

Effective: December 13, 2000

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2000-344	• 522.1581(c)(2), (d)

This amendment removes Canadian variations 522.1581(c)(2) and (d) with respect to JAR-22, relating to the presentation of metric units and reference to foreign operating rules in the Flight Manual, harmonizing this requirement. Transport Canada issued Airworthiness Manual Advisory (AMA) 500/13 to provide guidance on the format and content of Flight Manuals.

Deletion of Canadian Variation 522.1581(c)(1)**Effective: May 23, 2001**

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2001-013	• 522.1581(c)(1)

This amendment removes the Canadian variation 522.1581(c)(1) with respect to JAR-22, harmonizing AWM 522.1581 with JAR 22.1581 (Change 5).

Addition of Canadian Variation 522.1557(b)(3)**Effective: May 22, 2002**

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2000-343	• 522.1557(b)(3)

This amendment introduces the requirement for the use of metric units on placards and markings at fuel and oil tank openings of powered gliders. This requirement is consistent with what has been required for many years to all powered aircraft in Canada.

JAR-22 Amendment 6**Effective: January 15, 2003**

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2002-061	<ul style="list-style-type: none">• 522.51(a)• 522.207(a),(d)• 522.785(e),(f)• 522.788• 522.1149(a)• 522.1305(h)• 522.1521(b)(4)• 522.1559• 522.1563• 522.1585(f),(h),(i),(j),(k)• 522.1587(c)• 522.1923

This amendment revises sections of AWM Chapter 522 based on JAA NPAs 22B-31, 22D-46, 22D-64, 22B-65, 22E-68, and 22G-69, which make up JAR-22 Change 5 Amendment 6, dated 1 August 2001.

This amendment also re-harmonizes AWM 522.1585(f), (h), (i) and (j) with JAR-22. Included in this change is the removal of 522.1585(f)(1) through (f)(5) that were included into AWM Chapter 522 by NPA 2000-242, which replaced the text of AWM 522.1585(f) with the text of AMC 22.1585(f), arising from JAA NPA 22G-59. Although the intent of NPA 2000-242 was to harmonize with amendments introduced by JAR-22 Orange Paper Amendment 22/94/1 (subsequently Change 5), the Canadian variation was inadvertently introduced. The text of AMC 22.1585(f) will be adopted as Transport Canada advisory material in Advisory Circular 522-001. Subparagraph 522.1585(k) is adopted into the AWM based on JAR 22.1585(k) that arose from JAA NPA 22D-64.

JAA NPA 22B-31 amended the requirements of JAR 22.207(a) and (d) such that the JAR-22 Amendment 6 requirements now reflect what had been the Canadian variation, AWM 522.207(e), since the First Edition. Hence, this amendment removes the Canadian variation and harmonizes the text of AWM 522.207 with JAR 22.207.

Change 522-5**Published: December 30, 2007**

This change incorporates three amendments. The first incorporates editorial corrections; the second incorporates JAR-22 Amendment 7; and the third amends AWM Chapter 522 by adopting new standards based on the European Aviation Safety Agency (EASA) Certification Specifications CS-22.

Editorial Corrections**Effective: July 16, 2007**

Table of Change Information	
Notice of Proposed Amendment	Amended Section
<ul style="list-style-type: none"> 2006-038 	<ul style="list-style-type: none"> Enabling Authority Table of Contents 522.1(a), (b) and (d) 522.143(b) and (c) 522.147 522.161(c) 522.181 522.201(f) 522.221(b) 522.331(d) 522.345 (b) 522.423 522.479(b) & (c) 522.483 522.485 522.583(a), (b) & (c) 522.585(a) 522.625(a) 522.711(d) & (h) 522.729(b) 522.901(c) 522.971(a) 522.1323(c) 522.1511 522.1583(a), (d) & (f) 522.1801 522.1901

This amendment entitled "Editorial" makes editorial corrections to provisions of AWM Chapter 522 already incorporated by reference from JAR-22 - Sailplanes and Powered Sailplanes. AWM Chapter 522 has inadvertently contained editorial errors with respect to the

adopted standards of JAR-22. Therefore, these editorial and other corrections are needed to realign the AWM with respect to the already incorporated JAR-22 amendments.

JAR-22 Amendment 7	Effective: July 16, 2007
Table of Change Information	
Notice of Proposed Amendment	Amended Section
<ul style="list-style-type: none"> 2007-026 	<ul style="list-style-type: none"> 522.3(d) 522.23(a) 522.49(b) 522.73(b) 522.151(c) 522.201(g) 522.207(c) 522.221(a) 522.333(c) 522.345(a) 522.441 522.473(b) 522.483 522.581(b) 522.697(c) 522.723 522.725(b) & (c) 522.891 522.892 522.893 522.894 522.895 522.896 522.897 522.1149(b) 522.1303(d) 522.1514 522.1529(n) 522.1557(g) & (h) 522.1583(g) & (k) 522.1585(g),(h),(i),(j),(k),(l) & (m)

This amendment entitled "JAR-22 Amendment 7" adopts by reference Amendment 7 of JAR-22, issued by the Joint Aviation Authorities (JAA) on September 1, 2003.

Table of Change Information	
Notice of Proposed Amendment	Amended Section
<ul style="list-style-type: none">2007-027	<ul style="list-style-type: none">522.995(d)522.1305(i)522.1557(b)522.1585(l), (m), (n)522.1801522.1857522.1901522.1947Appendix FAppendix GAppendix IAppendix JAppendix K

This amendment entitled “CS-22” adopts by reference changes introduced by Certification Specifications CS-22 (ED No. 2003/13/RM), issued by the European Aviation Safety Agency (EASA) that entered into force on November 14, 2003.

Chapter 522 of the Airworthiness Manual (AWM) was originally based on the standards of the Joint Aviation Authorities requirements JAR-22. However, on September 28, 2003, the European Aviation Safety Agency (EASA) was created and on November 14, 2003, the new Certification Specifications (CS) were put into force.

The new Certification Specifications for Sailplanes and Powered Sailplanes «CS-22» are introduced by EASA to replace JAR-22. The requirements of CS-22 and are now being used by Transport Canada as the basis for the Canadian airworthiness standards for Gliders and Powered Gliders, supplemented by additional airworthiness requirements based on operational experience and environmental conditions in Canada.

Note that Appendices F, G, I, J and K are now formally included into AWM Chapter 522, as per CS-22 Book 1, and are hence now removed from Transport Canada Advisory Circular 522-001 at Issue 2.

Change 522-6

Published: December 1, 2009

On December 1, 2009, Part V Subpart 21 of the *Canadian Aviation Regulations* (CAR 521) came into force. CAR 521 replaces the following Regulations in Part V—Airworthiness:

Subpart 11 - Approval of the Type Design of an Aeronautical Product

Subpart 13 - Approval of Modification and Repair Designs

Subpart 16 - Aircraft Emissions

Subpart 22 - Gliders and Powered Gliders

Subpart 23 - Normal, Utility, Aerobatic and Commuter Category Aeroplanes

Subpart 25 - Transport Category Aeroplanes

Subpart 27 - Normal Category Rotorcraft

Subpart 29 - Transport Category Rotorcraft

Subpart 31 - Manned Free Balloons

Subpart 33 - Aircraft Engines

Subpart 35 - Aircraft Propellers

Subpart 37 - Aircraft Appliances and Other Aeronautical Products

Subpart 41 - Airships

Subpart 51 - Aircraft Equipment

Subpart 91 - Service Difficulty Reporting

Subpart 93 - Airworthiness Directives

In addition, with publication of CAR 521, the following Chapters of the Airworthiness Manual have been withdrawn:

Chapter 511 - Approval of the Type Design of an Aeronautical Product

Chapter 513 - Approval of Modification and Repair Designs

Standard 591 - Service Difficulty Reporting

Standard 593 - Airworthiness Directives

This change amends section 522.1 to reflect changes in legal drafting style, in terminology and in references required because of the introduction of CAR 521. In addition, subsection 521.31(1) of the CARs is now used to legally enable this Chapter of the AWM.

Change 522-7

Published: December 1, 2010

Proposed adoption by reference of changes introduced by the Certification Specification CS-22 Amendment 1, issued by the European Aviation Safety Agency (EASA) that entered into force on January 10, 2008.

As discussed in the EASA NPA 2007-12, the objective of this amendment is to improve the occupant protection against serious injuries with lasting effects and enhance the survivability chances in case of emergency landing conditions. In particular, this amendment introduces structural requirements for emergency landing conditions corresponding to the improvements in glider design achieved within the last 20 years and incorporates the results of research programmes related to the crashworthiness of glider cockpits.

Table of Change Information	
Notice of Proposed Amendment	Amended Section
<ul style="list-style-type: none"> 2009-118 	<ul style="list-style-type: none"> 522.561(b)(1) 522.561(b)(2) 522.561(b)(2)(d) 522.785(f) 522.787(b)

The revised section 522.561 of the CARs, *Emergency Landing Conditions*, reflects the current knowledge for protecting glider occupants against serious injury during emergency (outfield) landings and impacts, following recovery from emergency situations close to the ground. The increased loads in the revised section 522.561 of the CARs, also take into account the introduction of Glider Parachute Rescue Systems (GPRS), which after activation brings the glider or its damaged body to the ground at a vertical speed of maximum 8 m/sec and approximately 45° negative pitch.

Change 522-8

Published: June 1, 2012

This change incorporates three amendments. The first amends Chapter 522 by adopting by reference new standards based on the European Aviation Safety Agency (EASA) Certification Specifications CS-22 at Amendment 2. The second and third notices of proposed amendment incorporate editorial corrections.

Certification Specifications CS-22 Amendment 2 - *Emergency Exits*

Effective: March 27, 2012

Table of Change Information	
Notice of Proposed Amendment	Amended Section
<ul style="list-style-type: none"> 2011-015 	<ul style="list-style-type: none"> 522.807(a)

This notice of proposed amendment modifies the emergency exit design standards in light of accidents and incidents involving escape from an aircraft in an inverted position. It introduces a requirement that crash attitudes, such as turnover, be considered in the design.

The Agency has received two safety recommendations following unrelated accidents to UK registered aeroplanes. In both cases, non-fatal accidents occurred where the aeroplanes came to rest in an inverted position with the occupants unable to escape unaided due to the design of the canopy, which opened upwards.

**Correction to 522.1947 Propeller Adjustments
and Parts Replacement**

Effective: March 27, 2012

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2010-026	• 522.1947

This notice of proposed amendment is to make a correction to section 522.1947 of the *Airworthiness Manual* that was erroneously revised at Change 522-5. There originally was and currently is no intent to have a technical difference between section 522.1947 and CS 22.1947.

Correction to 522.207 Stall Warning

Effective: March 27, 2012

Table of Change Information	
Notice of Proposed Amendment	Amended Section
• 2011-014	• 522.207(c)(2)

This notice of proposed amendment is to make a correction to section 522.207 of the *Airworthiness Manual* (AWM). This error was introduced through NPA 2007-026 at change 522-5. A correction to section 522.207(c)(2) of the AWM is required to harmonize this section with CS 22.207(c)(2) published by the European Aviation Safety Agency (EASA).

PART V - AIRWORTHINESS

AIRWORTHINESS MANUAL CHAPTER 522 — GLIDERS AND POWERED GLIDERS

(2007/12/30)

SUBCHAPTER A GENERAL

522.01

For the purposes of this Chapter, wherever the words “glider” and “powered glider” appear, the words “sailplane” and “powered sailplane” respectively shall be substituted therefor. Wherever the word “must” is used, the word “shall” shall be substituted therefor.

522.1 *Applicability*

(a) This Chapter sets out airworthiness standards for the issue of type certificates, and changes to those certificates, for gliders and powered gliders in the utility U and aerobatic A categories:

(amended 2007/07/16)

(1) Gliders the maximum weight of which does not exceed 750 kg;

(2) Single engined (spark or compression-ignition) powered gliders the design value W/b^2 (weight to span²) of which is not greater than $3(W [kg], b[m])$ and the maximum weight of which does not exceed 850 kg; and

(3) Gliders and powered gliders the number of occupants of which does not exceed two.

(b) Each person who, following the procedures set out in the *Canadian Aviation Regulations* (CARs) Part V, Subparts 11 and 13, applies for such a type certificate or change to a type certificate must show compliance with the applicable requirements of this chapter, except as provided in subparagraph (d).

(amended 2007/07/16)

(c) Those requirements in this Chapter 522 which apply only to powered gliders are marginally annotated with the letter P. Requirements not so marked apply both to gliders and to powered gliders with engines stopped and engine or propeller retracted where appropriate. In these requirements the word “glider” means both “glider” and “powered glider”.

(d) Unless specifically stated otherwise, the term “powered glider” includes those powered gliders which may be incapable of complying with 522.51 and/or 522.65(a) and which must consequently be prohibited from taking off solely by means of their own power by a limitation in the Flight Manual. These are referred to in the text as “Self-Sustaining Powered Gliders”. For Self-Sustaining Powered Gliders, the additional requirements in Appendix I are applicable.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

(Change 522-3 (94-04-30))

522.3 *Glider Categories*

(a) The Utility Category is limited to gliders intended for normal soaring flight. The following aerobatic manoeuvres may be permitted if demonstrated during type certification-

- (1) Spins;
- (2) Lazy eights, chandelles, stall turns and steep turns;
- (3) Positive loops.

(b) Gliders intended for aerobatic manoeuvres additional to those permitted in the Utility Category must be certificated in the Aerobatic Category. The permitted aerobatic manoeuvres must be established during type certification.

(c) Gliders may be certified in more than one category if the requirements of each requested category are met.

(d) Powered gliders may be used for aerotowing gliders if they comply with Appendix K. (amended 2007/07/16)

SUBCHAPTER B FLIGHT GENERAL

522.21 *Proof of Compliance*

(a) Each requirement of this Subchapter must be met at each appropriate combination of weight and c.g. within the range of loading conditions for which certification is requested. This must be shown:

- (1) By test upon a glider of the type for which certification is requested or by calculations based on and equal in accuracy to the result of testing; and
- (2) By systematic investigation of each critical combination of weight and c.g.

(b) Compliance must be established for all configurations (such as position of air brakes, wing-flaps, landing gear etc.) at which the glider will be operated except as otherwise stated. In demonstrating compliance, the powerplant or propeller, if retractable, must be retracted, except as otherwise stated.

Note: Flight tests required in this Subchapter B do not constitute all the flight testing necessary to show compliance with Chapter 522.

(Change 522-1 (87-08-31))

522.23 *Load Distribution Limits*

(a) The ranges of weight and c.g. within which the glider may be safely operated must be established and must include the range for lateral c.g. if possible loading conditions can result in significant variation. Compliance must be shown over the lateral c.g. range and over a longitudinal c.g. range between the foremost limit of the c.g. and 1% of the standard mean chord or 10 mm, whichever is greater, aft of the aftmost limit of the c.g. (amended 2007/07/16)

(b) The c.g. range must not be less than that which corresponds to the weight of each occupant, including parachute, varying between 110 kg and 70 kg, without the use of ballast as defined in 522.31(c).

522.25 Weight Limits

(a) *Maximum weight.* The maximum weight must be established so that it is:

(1) Not more than:

- (i) The highest weight selected by the applicant;
- (ii) The design maximum weight, which is the highest weight at which compliance with each applicable structural loading condition of this Chapter is shown; or
- (iii) The highest weight at which compliance with each applicable flight requirement of this Chapter is shown.

(2) Not less than the weight which results from the empty weight of the glider, plus a weight of occupant(s) and parachute(s) of 110 kg for a single seat glider or 180 kg for a two seat glider, plus the required minimum equipment, plus any expendable ballast and for a powered glider sufficient fuel for at least half an hour of flight at maximum continuous power.

(b) The minimum weight must be established so that it is not more than the sum of:

(1) The empty weight determined under 522.29; and

(2) A weight of occupant and parachute of 55 kg, plus any ballast as defined in 522.31(c).

(Change 522-1 (87-08-31))

(Change 522-3 (94-04-30))

522.29 Empty Weight and Corresponding Centre of Gravity

(a) The empty weight and corresponding c.g. must be determined by weighing the glider:

(1) With:

- (i) Fixed ballast;
- (ii) Required minimum equipment;
- (iii) For a powered glider, unusable fuel, maximum oil and, where appropriate, engine coolant and hydraulic fluid.

(2) Excluding:

- (i) Weight of occupant(s) and parachute(s);
- (ii) Other readily removable items of load.

(b) The condition of the glider at the time of determining empty weight must be one that is well defined and easily repeated.

522.31 Ballast

There are three types of ballast:

- (a) Fixed ballast intended for correcting a deficiency in the glider's balance;
- (b) Expendable ballast which can be jettisoned in flight and which serves to increase the weight and consequently the speed of the glider; and
- (c) Removable ballast used to supplement the weight of an occupant and parachute (when lower than 70 kg) in order to keep the c.g. position within limits. This ballast can be adjusted before, but not during, flight.

Performance

522.45 General

Compliance with performance requirements of this Subchapter must be shown for still-air in standard atmosphere and at sea-level.

522.49 Stalling Speed

(a) V_{SO} is the stalling speed, (CAS), if obtainable, or the minimum steady speed at which the glider is controllable, with:

- (1) Landing gear extended;
- (2) Wing-flaps in the landing position;
- (3) Air brakes retracted or extended whichever position results in the lowest value of V_{SO} ;
- (4) Maximum weight; and
- (5) c.g. in the most unfavourable position within the allowable range.
- (6) For a powered glider;
 - (i) The engine idling (throttle closed);
 - (ii) Propeller in the take-off position;
 - (iii) Cowl Flaps closed.

(b) The stalling speed in the landing configuration must not exceed:

- (1) 80 km/h with:
 - (i) air brakes retracted; and at
 - (ii) maximum weight with water ballast tanks empty.
- (2) 90 km/h with:
 - (i) air brakes retracted; and at
 - (ii) maximum weight with water ballast.

(3) 95 km/h with:

(amended 2007/07/16)

- (i) airbrakes fully extended; and at
- (amended 2007/07/16)

(ii) maximum weight with water ballast.

(amended 2007/07/16)

(c) V_{S1} is the stalling speed (CAS), if obtainable, or the minimum steady speed at which the glider is controllable with the:

- (1) Glider in the configuration existing in the test in which V_{S1} is being used; and
- (2) Weight used when V_{S1} is being used as a factor to determine compliance with a required performance standard.
- (3) For a powered glider;
 - (i) The engine idling (throttle closed)
 - (ii) Propeller in the take-off position;
 - (iii) Cowl flaps closed.

(d) Reserved.

(e) V_{S0} and V_{S1} must be determined by flight tests using the procedure specified in 522.201.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.51 Take-off

(a) For a powered glider the take-off distance at maximum weight and in zero wind, from rest to attaining a height of 15 m must be determined and must not exceed 500 m when taking off from a dry, level, hard surface. In demonstration of the take-off distance, the powered glider must be allowed to reach the selected speed promptly after lifting off and this speed must be maintained throughout the climb.

(amended 2003/01/15)

(b) The selected speed must not be less than:

(amended 2000/11/25)

(1) $1.3 V_{S1}$, or

(amended 2000/11/25)

(2) any lesser speed, not less than $1.15 V_{S1}$, that is shown to be safe under all reasonably expected operating conditions, including turbulence and complete engine failure.

(amended 2000/11/25)

(Change 522-1 (87-08-31))

522.65 Climb

(a) For a powered glider the time for climb from leaving the ground up to 360 m above the field must not exceed four minutes with:

(amended 2000/11/25)

- (1) not more than take-off power;
- (2) landing gear retracted;
- (3) wing-flaps in take-off position;

(4) cowl flaps (if any) in the position used in the cooling tests.

(b) For Self-Sustaining Powered Gliders, the maximum altitude that can be sustained must be determined.

(amended 2000/11/25)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.71 Rate of Descent

For a powered glider the smallest rate of descent in power-off configuration at maximum weight and most unfavourable c.g. position must not exceed the following limits:

(a) With a single-seater powered glider, 1.0 m/s;

(b) with a two-seater powered glider, 1.2 m/s.

(Change 522-1 (87-08-31))

522.73 Descent, High Speed

It must be shown that the glider with the air brakes extended, will not exceed V_{NE} in a dive at an angle to the horizon of:

(amended 2000/11/25)

(a) 45° when the glider is certified for cloud flying and/or aerobatics when certificated in the Aerobatic or Utility Category;

(amended 2000/11/25)

(b) in other cases

(amended 2007/07/16)

(i) 30°

(amended 2007/07/16)

(ii) less than 30° when a rate of descent of more than 30 m/s can be achieved.

(amended 2007/07/16)

522.75 Descent, Approach

It must be shown that the glider has a glide slope not flatter than one in seven at a speed of $1.3 V_{SO}$ with air brakes extended at maximum weight.

Controllability and Manoeuvrability

522.143 General

(a) It must be possible to make a smooth transition from one flight condition to another (including turns and slips) without exceptional piloting skill, alertness or strength, and without danger of exceeding the limit load factor, under any probable operating condition, and additionally, in the case of a powered glider, with the engine running at all allowable power settings.

(b) Any unusual flying characteristics observed during the flight tests required to determine compliance with the flight requirements and any significant variations in flight characteristics

caused by rain must be determined. In the case of a powered glider this requirement must be met with the engine running at all allowable powers.

(c) If marginal conditions exist with regard to required pilot strength, the 'strength of pilots' limits must be shown by quantitative tests. In no case may the limits exceed those prescribed in the following table. In the case of a powered glider this requirement must be met with the engine running at all allowable powers.

Force applied at hand grip or rudder pedal	Pitch	Roll	Yaw	Air brakes, towing release, wing flaps, landing gear
	daN	daN	daN	daN
(a) Temporary application				
hand	20	10		20
feet			40	
(b) Prolonged application				
hand	2.0	1.5		
feet			10	

(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

(Change 522-3 (94-04-30))

522.145 Longitudinal Control

(a) It must be possible at any speed below $1.3 V_{S1}$ to pitch the nose downwards so that a speed equal to $1.3 V_{S1}$ can be reached promptly.

(1) Test conditions: all possible configurations and trimmed at $1.3 V_{S1}$.

(b) It must be possible throughout the appropriate flight envelope to change the configuration (landing gear, air brakes, wing-flaps, etc.) without exceptional piloting skill and without exceeding the control forces defined in 522.143(c).

(c) It must be possible, without exceptional piloting skill, to maintain the glider in steady straight flight:

(1) In towed flight, when the wing-flap configuration is changed within the range of permissible flap settings during steady straight flight;

(2) When retraction or extension of the air brakes is made at speeds between $1.1 V_{S1}$ and $1.5 V_{S1}$, where V_{S1} is the stalling speed with air brakes retracted or extended, whichever is the higher, for a given flap position;

(amended 2000/11/25)

(3) When gradual change of the wing-flap configuration within the range of permissible flap settings is made during steady horizontal flight at $1.1 V_{S1}$ with simultaneous application of maximum continuous power.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.147 Lateral and Directional Control

Using an appropriate combination of controls it must be possible to reverse the direction of a turn with a 45° bank in the opposite direction within $b/3$ seconds (b is the span in metres) when the turns are made at a speed of $1.4 V_{S1}$ with wing-flaps in the most positive en-route position, air brakes and, where applicable, landing gear retracted and without significant slip or skid.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.151 Aerotowing

(a) If the glider is equipped for aerotowing, aerotows must be demonstrated at speeds up to V_T without:

- (1) Excessive control forces and displacements for maintaining the wings at zero bank angle and in keeping a steady flight path;
- (2) Control forces exceeding those given in 522.143 at speeds up to V_T ;
- (3) Difficulty being experienced in regaining normal towing position after the glider has been displaced laterally or vertically; and
- (4) Any possibility, at the release, of the cable end or ends catching onto any part of the glider.

(b) Tests must be carried out with crosswind components not less than $0.2 V_{SO}$ or 15 km/h, whichever is the greater.

(c) Compliance with the following requirements must be shown:

- (1) With the glider on tow in the normal towing position it must be displaced laterally relative to the towing aircraft by the use of rudder and aileron, to give an initial disturbance in bank of 30°. The pilot must then be able to regain the normal towing position without exceptional piloting skill.
- (2) The glider must be flown in a high towing position (approximately 15' above the flight path of the towing aircraft), and also in a low towing position (below the wake of the towing position without exceptional piloting skill).

(3) In conditions associated with the early stages of the aerotow, any pitching tendency of the glider must be immediately controllable, without exceptional piloting skill, under any combinations of allowable towing conditions.

(amended 2007/07/16)

(d) A suitable range of cable lengths must be determined.

(e) Tests must be repeated for each location of the towing release mechanism and each configuration for which certification for aerotowing is requested.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.152 Winch-launching and Auto-tow Launching

(a) If the glider is equipped for winch-launching, or auto-tow launching, such launches must be demonstrated at speeds up to V_w , without:

- (1) Difficulty being experienced in maintaining the wings at zero bank angle when leaving the ground and in effecting a release;
- (2) Control forces exceeding those given in 522.143 or excessive control displacements;
- (3) Excessive pitching oscillation;
- (4) Push forces during the climb. If a trimming device is fitted, the position used during the climb must be stated.

(b) Tests must be carried out with crosswind components not less than $0.2 V_{S0}$ or 15 km/h, whichever is the greater.

(c) Tests must be made for each location and arrangement of the release mechanism and for each configuration for which certification for winch launching or auto-tow launching is requested.

522.153 Approach and Landing

(a) With a crosswind component of not less than $0.2 V_{S0}$ or 15 km/h, whichever is the greater, it must be possible to perform normal approaches and landings until the glider comes to a stop, without Exceptional piloting skill and without encountering any uncontrollable ground-looping tendency.

(b) After touchdown there must be no undue tendency to ground loop, pitching oscillation or nose over.

(c) The use of air brakes during the approach must not cause excessive variation of control force or control displacement nor affect the controllability of the glider, when it is brought into use at any allowable speed down to $1.2 V_{S1}$, where V_{S1} is appropriate to the configuration with air brakes retracted or extended, whichever gives the greater value.

522.155 Elevator Control Force in Manoeuvres

The elevator control forces during turns or when recovering from maneuvers must be such that an increase in load factor causes an increase in control force. The minimum value of this force for a stabilized turn with a 45° bank at $1.4 V_{S1}$ must be 0.5 daN, with the controls trimmed to maintain the glider in equilibrium at $1.4 V_{S1}$ in steady straight flight with wing-flaps in the most critical position, air brakes and, where applicable, landing gear retracted.

(Change 522-1 (87-08-31))

*Trim***522.161 Trim**

(a) *General.* Each glider must meet the trim requirements of this paragraph after being trimmed and without further pressure upon, or movement of, the primary controls or their corresponding trim controls by the pilot.

(b) *Lateral and Directional Trim.*

(1) *Lateral trim.* The glider must be capable of being so trimmed that there is no tendency for the glider when in straight flight at $1.4 V_{S1}$ with wing-flaps in all en-route positions, air brakes, and where applicable, landing gear retracted, to turn or bank, when the aileron control is released and the rudder control held fixed in the neutral position.

(2) *Directional trim.* The glider must be capable of being so trimmed that there is no tendency for the glider, when in straight flight at $1.4 V_{S1}$ with wing-flaps in all en-route positions, air brakes, and where applicable, landing gear retracted, to yaw when the rudder control is released and the aileron control held fixed in the neutral position.

(c) *Longitudinal Trim.*

(1) If the glider has no inflight adjustable trimming device, the trim speed must be between $1.2 V_{S1}$ and $2.0 V_{S1}$ for all c.g. positions.

(amended 2007/07/16)

(2) If the glider has an inflight adjustable trimming device, the following requirements must be met without further pressure upon or movement of the primary control or the corresponding trim control:

(i) The glider must maintain trim with wing-flaps in the landing position, the air brakes retracted and landing gear extended within the speed range between $1.2 V_{S1}$ and $2.0 V_{S1}$;

(ii) In towed flight the glider must maintain trim within the speed range between $1.4 V_{S1}$ and V_T ;

(iii) In the most adverse out-of-- trim condition, the control force must be less than 20 daN between $1.1 V_{S1}$ and $1.5 V_{S1}$.

(3) For powered gliders, retraction and extension of the powerplant or propeller must not produce excessive trim changes.

(4) The powered glider, with the engine operating, must maintain longitudinal trim during:

(i) a climb with maximum continuous power at a speed V_Y with the landing gear retracted and wingflaps in the take-off position;

(ii) level flight at all speeds between V_Y and $0.9 V_H$, with the landing gear retracted and wing-flaps in positions appropriate to each speed.

(Change 522-1 (87-08-31))

*Stability***522.171 General**

The glider must meet the conditions of 522.173 through 522.181 inclusive. In addition, the glider must show suitable stability and control 'feel' in any condition normally encountered in service.

522.173 Static Longitudinal Stability

(a) Under the conditions and throughout the speed range specified in 522.175:

(1) The slope of the curve, stick force versus speed, must be positive and have a value such that any significant speed change will cause a variation in stick force plainly perceptible to the pilot.

(2) The slope of the curve, stick displacement versus speed, must not be negative, except that a negative slope may be acceptable provided that it can be demonstrated that there is no difficulty in control.

(b) The air speed must return to within $\pm 15\%$ or ± 15 km/h of the original trimmed speed, whichever is the greater when the control force is slowly released at any trimmable speed up to V_{NE} and where applicable V_{FE} and down to the appropriate minimum speed for steady unstalled flight. In addition, for a powered glider with the engine running, this requirement must be met at all allowable power settings.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.175 Demonstration of Static Longitudinal Stability

The stick force/speed curve must have a stable slope in the following conditions:

(a) Cruising Configuration:

(1) At all speeds between $1.1 V_{S1}$ and V_{NE} ;

(2) Wing-flaps in the position for cruising and for circling flight;

(3) Landing gear retracted;

(4) Glider trimmed at $1.4 V_{S1}$ and $2 V_{S1}$ (if fitted with a trimming device); and

(5) Air brakes retracted.

(b) Approach.

(1) At all speeds between $1.1 V_{S1}$ and V_{FE} ;

(2) Wing-flaps in the landing position;

(3) Landing gear extended;

(4) Glider trimmed at $1.4 V_{S1}$ (if fitted with a trimming device); and

(5) Air brakes both retracted and extended.

(c) Climb for Powered Glider:

- (1) At all speeds between $0.85V_Y$ or $1.05 V_{S1}$, whichever is higher, and $1.15 V_Y$.
- (2) Landing gear retracted;
- (3) Wing-flaps in the position for climb;
- (4) Maximum weight;
- (5) Maximum continuous power; and
- (6) Glider trimmed at V_Y (if fitted with a trimming device).

(d Cruise for Powered Glider:

- (1) At all speeds between $1.3 V_{S1}$ and V_{NE} ;
- (2) Landing gear retracted;
- (3) Wing-flaps retracted or, in the case of flaps approved for use in en-route flying, in all appropriate positions;
- (4) Maximum weight;
- (5) Power for level flight at $0.9 V_H$; and
- (6) Glider trimmed for level flight (if fitted with a trimming device).

(e Approach for Powered Glider:

- (1) At all speeds between $1.1 V_{S1}$ and V_{FE} ;
- (2) Wing-flaps in the landing position;
- (3) Landing gear extended.
- (4) Glider trimmed at $1.5 V_{S1}$ (if fitted with a trimming device);
- (5) Air brakes both retracted and extended;
- (6) Engine idling (throttle closed); and
- (7) Propeller in take-off position.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.177 Lateral and Directional Stability

(a) With the glider in straight steady flight, and when the aileron and rudder controls are gradually applied in opposite direction, any increase in sideslip angle must correspond to an increased deflection of the lateral control. This behaviour need not follow a linear law.

(b) In a sideslip any control force reversal must not be such as to require exceptional piloting skill to control the glider.

(Change 522-1 (87-08-31))

(Change 522-3 (94-04-30))

522.181 Dynamic Stability

Any short period oscillations occurring between the stalling speed and V_{DF} , must be heavily damped with the primary controls:
(amended 2007/07/16)

- (a) Free.
- (b) Fixed.

In the case of a powered glider this requirement must be met with the engine running at all allowable powers.

(Change 522-1 (87-08-31))

Stalls**522.201 Wings Level Stall**

(a) Stall demonstrations must be conducted by reducing the speed by approximately 2 km/h per second until either a stall results as evidenced by a downward pitching motion or rolling motion not immediately controllable or until the longitudinal control reaches the stop. It must be possible to produce and correct roll and yaw by unreversed use of the controls until the stall occurs.

(b) It must be possible to prevent more than 30° of roll by normal use of the controls during recovery. There must be no uncontrollable tendency of the glider to spin.

(c) Stalling behaviour must not be unduly sensitive to sideslip.

(d) The loss of altitude from the beginning of the stall until regaining level flight by applying normal procedures and the maximum pitch attitude below the horizon must be determined.

(e) With the glider in straight flight at 1.2 V_{S1} in the configuration appropriate to winch launching by pulling rapidly on the control stick, a pitch attitude approximately 30° above the horizon must be achieved and the resulting stall must not be severe and such as to make prompt recovery difficult.

(f) Compliance with the requirements of subparagraphs (a) through (d) and (g) of this paragraph must be shown under the following conditions:

- (1) Wing-flaps in any position;
- (2) Air brakes retracted and extended;
- (3) Landing gear retracted and extended;
- (4) Glider trimmed to 1.5 V_{S1} (if fitted with a trimmer);
- (5) Additionally, for powered gliders:
 - (i) Cowl flaps in appropriate configuration;
 - (ii) Power:
(amended 2007/07/16)
 - engine idling, and
 - 90% of maximum continuous power;

(iii) Propeller in take-off position.

(g) For gliders equipped to carry water ballast, it must be shown that it is possible to regain level flight without encountering uncontrollable rolling or spinning tendencies in the stall demonstration of (a) with the asymmetry that may result from any single malfunction of the system.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

522.203 Turning Flight Stalls

(a) When stalled during a coordinated 45° banked turn, it must be possible to regain normal level flight without encountering uncontrollable rolling or spinning tendencies. Compliance with this requirement must be shown under the conditions of 522.201(f) that result in the most critical stall behaviour of the glider. In any case the landing configuration, with air brakes retracted and extended, must be investigated.

(b) The loss of altitude from beginning of the stall until regaining level flight by applying normal procedures must be determined.

(Change 522-1 (87-08-31))

522.207 Stall Warning

(a) Except as provided by 522.207(d), there must be a clear and distinctive stall warning with air brakes, wing-flaps and landing gear in any normal position, both in straight and in turning flight. In the case of a powered glider compliance with this requirement must also be shown with the engine running in the conditions prescribed in 522.201(f)(5).

(amended 2003/01/15)

(b) The stall warning may be furnished either through the inherent aerodynamic qualities of the glider (e.g. buffeting) or by a device that will give clearly distinguishable indications.

(c) The stall warning must begin:

(1) at a speed between 1.05 V_{S1} and 1.1 V_{S1} , or

(2) between 2 and 5 seconds before the stall occurs when longitudinal control is moved at a pace corresponding to approximately 2 km/h per second rate of reduction of speed

(amended 2012/03/27)

and must continue until the stall occurs.

(amended 2012/03/27)

(d) Compliance with 522.207(a) through (c) is not required for a glider, a self-launching powered glider with the engine stopped, or a self-sustaining powered glider with the engine stopped or running if the following are met with air brakes, wing-flaps and landing gear in any normal position:

(amended 2003/01/15)

(1) recovery from a stall is prompt in both straight and turning flight:

(amended 2003/01/15)

(2) when a stall occurs from straight flight:

(amended 2003/01/15)

(i) it is possible to produce and correct roll by using the ailerons, the rudder being held neutral, and
(amended 2003/01/15)

(ii) no appreciable wing-dropping occurs when both ailerons and rudder are held neutral:
(amended 2003/01/15)

(3) when a stall occurs in a coordinated 45° banked turn, any subsequent rolling or yawing motion is not rapid and is readily controllable.
(amended 2003/01/15)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

(Change 522-3 (94-04-30))

Spinning

522.221 General

(a) Compliance with the following requirements must be shown in all configurations and, for a powered glider, with the engine idling. For gliders equipped to carry water ballast, the demonstrations of (b) through (g) must also be made for the most critical water ballast asymmetry that might occur due to any single malfunction or due to lateral accelerations during a spin.

(amended 2007/07/16)

(b) The glider must be able to recover from spins of at least five turns or such lesser number at which the spin changes into a spiral dive by applying the controls in a manner normal for recovery and without exceeding either the limiting air-speed or the limiting positive manoeuvring load factor for the glider. Tests must be conducted with wing-flaps and air brakes neutral and with:

(amended 2007/07/16)

- (1) Controls held in the position normal for spins;
- (2) Ailerons and rudder used in opposite directions;
- (3) Ailerons applied in the direction of rotation.

In addition and where applicable, tests must be conducted in critical combinations of air-brake extension, wing-flap deflection, water-ballast, including trim water-ballast and with the powerplant extended or retracted. For wing-flap positions for which a V_{FE} limitation is established, the flap position may be adjusted during recovery after the auto-rotation has stopped.

(c) A glider, in the configurations certified for intentional spinning, must be able to recover from any point in a spin as defined in 522.221(b) in not more than one additional turn. In those configurations not approved for intentional spinning, sub-paragraph (d) shall be applied.

(d) A glider in the configurations not certified for intentional spinning, must still be able to recover from a spin as defined in 522.221(b) in not more than one and a half additional turns.

(e) In addition, any glider must be able to recover from a one turn spin in any configuration in not more than one additional turn.

(f) The loss of altitude from the point at which recovery is initiated to the point at which horizontal flight is first regained must be determined in all of the above mentioned cases.

(g) It must be impossible to obtain uncontrollable spins with any use of the controls.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.223 Spiral Dive Characteristics

If there is any tendency for the spin to turn into a spiral dive the stage at which this tendency occurs, must be determined. It must be possible to recover from the condition without exceeding either the limiting air speed or the limiting positive manoeuvring factor for the glider. Compliance with this requirement must be shown without the use of air brakes.

Ground Handling Characteristics

522.233 Directional Stability and Control

(a) With cross-wind components not less than $0.2 V_{so}$ or 15 km/h, whichever is the greater, there must be no uncontrollable ground-loop tendency at any speed at which the powered glider may be expected to be operated on the ground.

(b) The powered glider must have adequate directional control during taxiing.

(Change 522-1 (87-08-31))

Miscellaneous Flight Requirements

522.251 Vibration and Buffeting

Each part of the glider must be free from excessive vibration at all speeds up to at least V_{DF} . In addition, there must be no buffeting, in any normal flight condition including the use of air brakes, severe enough to interfere with the satisfactory control of the glider, cause excessive fatigue to the crew, or result in structural damage. Stall warning buffeting within these limits is allowable. In the case of a powered glider this requirement must be met with the engine running at all allowable powers.

(Change 522-1 (87-08-31))

522.255 Aerobatic Manoeuvres

(a) Each Aerobatic and Utility Category glider must be able to perform safely the aerobatic maneuvers for which certification is requested.

(b) It must be shown that aerobatic maneuvers can be carried out with adequate margins between the speeds and accelerations attained therein and the proof strength and design speed of the glider.

(c) When determining the flight characteristics, account must be taken of the possibility of exceeding the recommended entry speeds for the maneuvers and errors which are likely to be made by the pilot while being trained for aerobatic maneuvers.

(d) During the flight tests it is not permitted to use any means (e.g. air brakes, wing-flaps) to restrict the speed in aerobatic manoeuvres.

(e) The recommended entry speed and where appropriate, the maximum acceleration must be determined for each manoeuvre approved.

SUBCHAPTER C STRUCTURE GENERAL

522.301 Loads

(a) Strength requirements are specified in terms of limit loads (the maximum loads to be expected in service) and ultimate loads (limit loads multiplied by prescribed factors of safety). Unless otherwise provided, prescribed loads are limit loads.

(b) Unless otherwise provided, the air and ground loads must be placed in equilibrium with inertia forces, considering each item of mass in the glider. These loads must be distributed so as to represent actual conditions or a conservative approximation to them.

(c) If deflections under load would significantly change the distribution of external or internal loads, this redistribution must be taken into account.

522.303 Factor of Safety

Unless otherwise provided, a factor of safety of 1.5 must be used.

522.305 Strength and Deformation

(a) The structure must be able to support limit loads without permanent deformation. At any load up to limit loads, the deformation may not interfere with safe operation. This applies in particular to the control system.

(b) The structure must be able to support ultimate loads without failure for at least three seconds.

However, when proof of strength is shown by dynamic tests simulating actual load conditions, the three second limit does not apply.

522.307 Proof of Structure

(a) Compliance with the strength and deformation requirements of 522.305 must be shown for each critical load condition. Structural analysis may be used only if the structure conforms to those for which experience has shown this method to be reliable. In other cases, substantiating load tests must be made.

(b) Certain parts of the structure must be tested as specified in Sub chapter D of this Chapter.

Note: Structural requirements contained in Subchapter C do not constitute all the structural requirements necessary to show compliance with Chapter 522.

Flight Loads**522.321 General**

(a) Flight load factors represent the ratio of the aerodynamic force component (acting normal to the flight path of the glider) to the weight of the glider. A positive flight load factor is one in which the aerodynamic force acts upward, with respect to the glider.

(b) Compliance with the flight load requirements of this Subchapter must be shown:

(1) At each critical altitude within the range in which the glider may be expected to operate; and

(2) At each practicable combination of weight and disposable load.

522.331 Symmetrical Flight Conditions

(a) The appropriate balancing horizontal tail load must be accounted for in a rational or conservative manner when determining the wing loads and linear inertia loads corresponding to any of the symmetrical flight conditions specified in 522.333 through 522.345.

(b) The incremental horizontal tail loads due to manoeuvring and gusts must be reacted by the angular inertia of the glider in a rational or conservative manner.

(c) In computing the loads arising in the prescribed conditions, the angle of attack is assumed to be changed suddenly without loss of flight speed until the prescribed load factor is attained. Angular accelerations may be disregarded.

(d) Aerodynamic data required for the establishment of the loading conditions must be verified by tests, calculations or by conservative estimation.

(1) In the absence of better information the maximum negative lift coefficient in the normal configuration may be taken as -0.8.

(2) If the pitching moment coefficient C_{mo} is less than ± 0.025 , a coefficient of at least -0.025 must be used for the wing and horizontal tail.

(amended 2007/07/16)

522.333 Flight Envelope

(a) *General.* Compliance with the strength requirements of this Subchapter must be shown at any combination of air speed and load factor on and within the boundaries of the flight envelopes specified by the manoeuvring and gust criteria of subparagraphs (b) and (c) of this paragraph respectively.

(b) *Manoeuvring envelope*. Wingflaps in the en route setting, air brakes closed. (See Figure 1.)

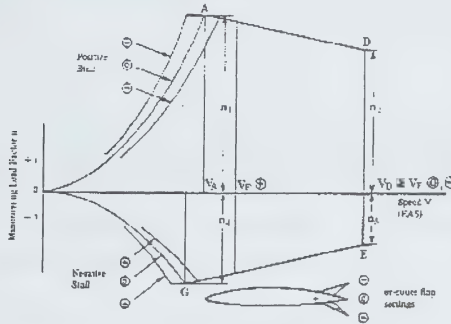


FIGURE 1 MANOEUVRING ENVELOPE

(c) *Gust envelope*. Wing-flaps in the en route setting. (See Figure 2.)

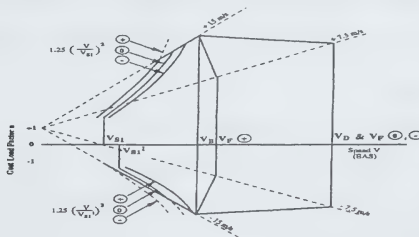


Figure 2 - Gust Envelope

(1) At the design gust speed V_B , the glider must be capable of withstanding positive (up) and negative (down) gusts of 15 m/s acting normal to the flight path.

(amended 2007/07/16)

(2) At the design maximum speed V_D , the glider must be capable of withstanding positive (up) and negative (down) gusts of 7.5 m/s acting normal to the flight path.

522.335 Design Air Speeds

The selected design air speeds are equivalent air speeds (EAS):

(a) *Design manoeuvring speed* V_A

$$V_A = V_{S1} \sqrt{n_1}$$

where:

V_{S1} = estimated stalling speed at design maximum weight with wing-flaps neutral and air brakes retracted.

(b) *Design flap speed*, V_F

(1) For each landing setting, V_F must not be less than the greater of:

- (i) $1.4 V_{S1}$, where V_{S1} is the computed stalling speed with wing-flaps neutral at the maximum weight.
- (ii) $2.0 V_{SF}$, where V_{SF} is the computed stalling speed with wing-flaps fully extended at the maximum weight.

(2) For each positive en-route setting, V_F must not be less than the greater of:

- (i) $2.7 V_{S1}$, where V_{S1} is the computed stalling speed at design maximum weight with wing flaps in the particular positive en-route setting.
- (ii) $1.05 V_A$, where V_A is determined in accordance with subparagraph (a) of this paragraph, i.e. for wingflaps neutral.

(3) For all other settings, V_F must equal V_D ,

(c) *Design Gust Speed* V_B . V_B must not be less than V_A .

(d) *Design Aerotow Speed* V_T . V_T must not be less than 125 km/h.

(e) *Design Winch-launching Speed* V_W . V_W must not be less than 110 km/h.

(f) *Design Maximum Speed* V_D . The design maximum speed may be chosen by the applicant but must not be lower than:

$$V_D = 18 \sqrt[3]{\left(\frac{W}{S}\right) \left(\frac{1}{Cd_{min}}\right)}$$

(km/h) for gliders of Category U.

$$V_D = 3.5 \left(\frac{W}{S}\right) + 200$$

(km/h) for gliders of Category A.

where:

W/S = wing loading (daN/m²) at design S maximum weight.

$C_{d_{\min}}$ = the lowest possible drag coefficient of the glider.

For a powered glider, V_D must also not be lower than $1.35 V_H$.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.337 Limit Manoeuvring Load Factors

The limit manoeuvring load factors on the V-n diagram (see Figure 1) must have at least the following values:

Category	U	A
n_1	+5.3	+7.0
n_2	+4.0	+7.0
n_3	-1.5	-5.0
n_4	-2.65	-5.0

Figure 1

522.341 Gust Load Factors

(a) In the absence of a more rational analysis, the gust load factors must be computed as follows:

$$n = 1 + \frac{\left[\left(\frac{k}{2} \right) \rho_0 U V a \right]}{\frac{mg}{s}}$$

where:

ρ_0 = density of air at sea-level (kg/m^3)

U = gust velocity (m/s)

V = equivalent air speed (m/s)

a = slope of wing lift curve per radian

m = mass of the glider (kg)

g = acceleration due to gravity (m/s^2)

S = design wing area (m^2)

k = gust alleviation factor calculated from the following formula:

$$k = \frac{0.88\mu}{5.3 + \mu}$$

where: $\mu = \frac{2^{\frac{m}{S}}}{\rho l_m a}$ (non-dimensional glider mass ratio)

where:

ρ = density of air (kg/m^3) at the altitude considered

l_m = mean geometric chord of wing (m)

(b) The value of n calculated from the expression given above need not exceed:

$$n = 1.25 \left(\frac{V}{V_{S1}} \right)^2$$

522.345 Loads with Air Brakes and Wingflaps Extended

(a) Loads with air brakes extended

(1) The glider structure including airbrake system, must be capable of withstanding the most unfavourable combination of the following parameters:

Equivalent Airspeed	V_D (EAS)
Air brakes	from the retracted to the fully extended position
Manoeuvring load factor	from -1.5 to 3.5 (amended 2007/07/16)

(2) The horizontal tail load is assumed to correspond to the static condition of equilibrium.

(3) In determining the spanwise load distribution, changes in this distribution due to the presence of the air brakes must be accounted for.

(b) *Load with wing-flaps extended.* If wing-flaps are installed, the glider must be assumed to be subjected to manoeuvres and gusts as follows:

(1) With wing-flaps in all landing settings, at speeds up to V_F :

(i) manoeuvring up to a positive limit load factor of 4.0;

(ii) positive and negative gusts of 7.5 m/s acting normal to the flight path.

(2) With wing-flap positions from the most positive en-route setting to the most negative setting, the manoeuvring conditions of 522.333(b) and the gust conditions of 522.333(c), except that the following need not be considered:

(amended 2007/07/16)

(i) speeds greater than the V_F appropriate to the wing-flap setting;

(ii) manoeuvring load factors corresponding to points above the line \overline{AD} or below the line \overline{GE} of Figure 1.

(amended 2007/07/16)

(c) *Speed limiting flaps.* If wing-flaps are to be used as a drag-increasing device for the purpose of speed limitation (air-brake) conditions specified in 522.345(a) must be met for all wing-flap positions.

(d) When an automatic wing-flap load limiting device is used, the glider must be designed for the critical combination of air speed and wing-flap position allowed by that device.

(Change 522-1 (87-08-31))

522.347 Unsymmetrical Flight Conditions

The glider is assumed to be subjected to the unsymmetrical flight conditions of 522.349 and 522.351. 522.351 Unbalanced aerodynamic moments about the c.g. must be reacted in a rational or conservative manner, considering the principal masses furnishing the reacting inertia forces.

522.349 Rolling Conditions

The glider must be designed for the rolling loads resulting from the aileron deflections and speeds specified in 522.455 in combination with a load factor of at least two-thirds of the positive manoeuvring load factors prescribed in 522.337.

522.351 Yawing Conditions

The glider must be designed for yawing loads on the vertical tail surface specified in 522.441 and 522.443.

522.361 Engine Torque

(a) The engine mount and its supporting structure must be designed for the effects of:

- (1) the limit torque corresponding to take-off power and propeller speed, acting simultaneously with 75% of the limit loads from flight condition A of 522.333(b);
- (2) the limit torque corresponding to the maximum continuous power and propeller speed, acting simultaneously with the limit loads from flight condition A of 522.333(b).

(b) For reciprocating engines the limit torque to be accounted for in 522.361(a) is obtained by multiplying the mean torque by one of the following factors:

- (1) 1.33 for engines with 5 or more cylinders;
- (2) 2 for engines with 4 cylinders;
- (3) 3 for engines with 3 cylinders;
- (4) 4 for engines with 2 cylinders;

522.363 Side Load on Engine Mount

(a) The engine mount and its supporting structure must be designed for a limit load factor in a lateral direction, for the side load on the engine mount, of not less than one-third of the limit load factor for flight condition A ($1/3n_1$).

(b) The side load prescribed in (a) may be assumed to be independent of other flight conditions.

522.371 Gyroscopic Loads

For powered gliders of airworthiness Category A, the engine mount and its supporting structure must be designed for gyroscopic loads resulting from maximum continuous r.p.m.

522.375 Winglets

(a) When winglets are installed the glider must be designed for -

- (1) The side loads due to maximum sideslip angle of the winglet at V_A ;
- (2) Loads resulting from gusts acting perpendicularly to the surface of the winglet at V_B and V_D ;
- (3) Mutual interaction effects of winglets and wing on aerodynamic loads;
- (4) Hand forces on the winglets; and
- (5) Loads due to wingtip landing as specified in 522.501, if the winglet can touch the ground.

(b) In the absence of more rational analysis the loads must be computed as follows:

- (1) The lift at the winglets due to sideslip at V_A -

$$L_{W_s} = 1.25 C_{L_{\max}} S_W \frac{\rho_0}{2} V_A^2$$

where: $C_{L_{\max}}$ = maximum lift coefficient of winglet profile

S_W = area of winglet

- (2) The lift of the winglets due to lateral gust at V_B and V_D -

$$L_{W_g} = a_W S_W \frac{\rho_0}{2} V U k$$

where: U = lateral gust velocity at the values as described in 522.333(c)

a_W = slope of winglet lift curve per radian

k = gust alleviation factor as defined in 522.443(b)

The above described load L_{W_g} need not exceed the value

- (3) Hand forces of 15 daN must be assumed to act at the tip of the winglet -

- (i) In horizontal inboard and outboard direction parallel to the spanwise axis of the wing; and
- (ii) In horizontal forward and backward direction parallel to the longitudinal axis of the fuselage.

In addition, the rigging loads as specified in 522.591 must be applied if the winglet plane is not normal to the plane of the wing.

(Change 522-2 (93-06-30))

Control Surfaces and Systems

522.395 Control System Loads

(a) Each flight control system, including stops, and its supporting structure must be designed for the loads corresponding to at least 125% of the computed hinge moments of the movable control surfaces in the conditions prescribed in 522.415 through 522.455. In computing the hinge moments reliable aerodynamic data must be used. The effects of tabs must be taken into account. In no case must the loads in any part of the system be less than those resulting from the application of 60% of the pilot efforts specified in 522.397(a).

(b) Pilot forces used for design are assumed to act at the appropriate control grips or pads as they would in flight, and to be reacted at the attachments of the control system to the control surface horns.

(Change 522-1 (87-08-31))

522.397 Loads Resulting from Limit Pilot Forces

(a) In addition to 522.395(a) the control systems for the direct control of the glider about its longitudinal, lateral, or yaw-axis (main control system) and other control systems affecting flight behaviour and supporting points must be designed to withstand as far as to the stops (these included) limit loads arising from the following pilot forces:

Control	Pilot Force daN	Method Of Force Application Assuming Single Lever Control Systems
Elevator	35	Push and pull handgrip of control stick
Ailerons	20	Move handgrip of control stick sideways
Rudder	90	Apply forward pressure on one rudder pedal
Air brakes Spoilers Wing-flaps	35	Push and pull handgrip of control lever
Towing cable release	35	Pull control handle

(b) the rudder control system must be designed to a load of 100 daN per pedal acting simultaneously on both pedals in forward direction.

(Change 522-1 (87-08-31))

522.399 Dual Control Systems

Dual control systems must be designed for:

(a) the pilots acting together in the same direction; and

(b) the pilots acting in opposition, each pilot applying 0.75 times the load specified in 522.397(a).

522.405 Secondary Control Systems

Secondary control systems such as those for landing gear retraction or extension, trim control, etc., must be designed for supporting the maximum forces that a pilot is likely to apply to those controls.

522.411 Control System Stiffness and Stretch

(a) The amount of movement available to the pilot of any aerodynamic control surface may not, in any condition of flight, be excessively reduced by elastic stretch of the control circuits.

If there are cables in the system and tension can be adjusted, the minimum value must be used for demonstrating compliance with all appropriate requirements.

(b) For cable operated systems, the allowable rigging tension in the cables must be established, taking into consideration the variations in temperature (see 522.689) which may occur.

(Change 522-1 (87-08-31))

522.415 Ground Gust Conditions

The control system from the control surfaces to the stops or when installed the arresting devices must be designed for limit loads corresponding to hinge moments calculated from the expression:

$$M_R = k l_R S_R q$$

where:

M_R = limit hinge moment

l_R = mean chord of control surface aft of hinge line

S_R = area of control surface aft of hinge line

q = dynamic pressure corresponding to an air speed of 100 km/h

k = limit hinge moment factor due to ground gust, taken from the following table:

Control Surface	K	Remarks
Aileron	± 0.75 ± 0.50	Control column secured in mid-position Ailerons at full travel: + moment at the one, moment at the other aileron
Elevator	± 0.75	Elevator fully up (-) or fully down (+) or in the position in which it can be locked
Rudder	± 0.75	Rudder at full travel right or left, or locked in neutral

Horizontal Tail Surfaces**522.421 Balancing Loads**

(a) A horizontal tail balancing load is the load necessary to maintain equilibrium in any specified flight condition with no pitching acceleration.

(b) The horizontal tail must be designed for the balancing loads occurring at any point of the limit manoeuvring envelope and in the air-brake and wing-flap positions as specified in 522.333 and 522.345.

522.423 *Manoeuvring Loads*

The horizontal tail must be designed for the most severe loads likely to occur in pilot-induced pitching maneuvers, at all speeds up to V_D .
(amended 2007/07/16)

522.425 *Gust Loads*

In the absence of a more rational analysis, the horizontal tail loads must be computed as follows:

$$P = P_o + \frac{\rho_o}{2} S_t a_h U k_H V \left(1 - \frac{d\epsilon}{d\alpha} \right)$$

where:

P = horizontal tail load (N)

P_o = horizontal tail balancing load acting on the horizontal tail before the appearance of the gust (N)

ρ_o = density of air at sea-level (kg/m³)

S_t = area of horizontal tail (m²)

a_h = slope of horizontal tail lift curve per radian

U = gust speed (m/s)

k_H = gust factor.

In the absence of a rational analysis the same value may be taken as for the wing.

V = speed of flight (m/s)

$\frac{d\epsilon}{d\alpha}$ = rate of change of downwash angle with wing angle of attack

(Change 522-1 (87-08-31))

522.427 *Unsymmetrical Loads for Powered Glider*

The slipstream effect on fixed surfaces and on rudder loads must be accounted for if such loading is to be expected.

(Change 522-1 (87-08-31))

Vertical Tail Surfaces

522.441 *Manoeuvring Loads*

The vertical tail surfaces must be designed for manoeuvring loads imposed by the following conditions:

- (a) At speed the greater of V_A and V_T, full deflection of the rudder.
- (b) At speed V_D, one-third of full deflection of the rudder.

522.443 Gust Loads

(a) Vertical tail surfaces must be designed to withstand lateral gusts to the values described in 522.333(c).

(b) In the absence of a more rational analysis, the gust load must be computed as follows:

$$P_f = a_v S_f \frac{\rho_o}{2} V U k$$

where:

P_f = gust load (N)

a_v = slope of vertical tail lift curve per radian

S_f = area of vertical tail (m^2)

ρ_o = density of air at sea-level (kg/m^3)

V = speed of flight (m/s)

U = gust speed (m/s)

k = gust factor, should be taken as 1.2

Supplementary Conditions for Tail Surfaces**522.447 Combined Loads on Tail Surfaces**

(a) The unsymmetrical distribution of the balancing load on the horizontal tail which arises in flight conditions A and D of the V-n envelope shall be combined with the appropriate manoeuvring load on the vertical surface as specified in 522.441 acting in such a direction as to increase the rolling torque.

(b) 75% for Category U and 100% for Category A of the loads according to 522.423 for the horizontal tail and 522.441 for the vertical tail must be assumed to be acting simultaneously.

(Change 522-2 (93-06-30))

522.449 Additional Loads Applicable to V-tails

A glider with V-tail, must be designed for a gust acting perpendicularly with respect to one of the tail surfaces at speed V_B .

Ailerons**522.455 Ailerons**

The ailerons must be designed for control loads corresponding to the following conditions:

(a) at speed the greater of V_A and V_T the full deflection of the aileron; and

(b) at speed V_D , one-third of the full deflection of the aileron.

Ground Loads**522.471 General**

The limit ground loads specified in this Subchapter are considered to be external loads and inertia forces that act upon a glider structure. In each specified ground load condition, the

external reactions must be placed in equilibrium with the linear and angular inertia forces in a rational or conservative manner.

522.473 Ground Load Conditions and Assumptions

(a) The ground load requirements of this Subchapter, must be complied with at the design maximum weight.

(b) The selected limit vertical inertia load factor at the c.g. of the glider for the ground load conditions prescribed in this Subchapter:

(amended 2007/07/16)

(1) may not be less than that which would be obtained when landing with a descent velocity of 1.77 m/s;

(amended 2007/07/16)

(2) may not be less than 3.

(amended 2007/07/16)

(c) Wing lift balancing the weight of the glider may be assumed to exist throughout the landing impact and to act through the c.g. The ground reaction load factor may be equal to the inertia load factor minus one.

522.477 Landing Gear Arrangement

522.479 through 522.499 apply to gliders with conventional arrangements of landing gear. For unconventional types it may be necessary to investigate additional landing conditions depending on the arrangement and design of the landing gear units.

(Change 522-1 (87-08-31))

522.479 Level Landing Condition

(a) For a level landing, the glider is assumed to be in the following attitude.

(1) For gliders with a tail skid and/or wheel, a normal level flight attitude.

(2) For gliders with nose wheels, attitudes in which -

(i) The nose and main wheels contact the ground simultaneously; and

(ii) The main wheels contact the ground and the nose wheel is just clear of the ground.

(b) The main gear vertical load component P_{VM} must be determined to the conditions in 522.725.

(amended 2007/07/16)

(c) The main gear vertical load component P_{VM} must be combined with a rearward acting horizontal component P_H so that the resultant load acts at an angle of 30° with the vertical.

(amended 2007/07/16)

(d) For gliders with nose wheels the vertical load component P_{VN} on the nose wheel in the attitude of (a)(2)(i) must be computed as follows and must be combined with a rearward acting horizontal component according to (c) taking into account 522.725(a):

$$P_{VN} = 0.8 \text{ mg}$$

where:

m = mass of glider (kg)

g = acceleration of gravity (m/s^2).

(Change 522-1 (87-08-31))

522.481 Tail-down Landing Conditions

For design of tail skid and affected structure and empennage including balancing weight attachment, the tail skid load in a tail down landing (main landing gear free from ground) must be calculated as follows:

$$P = 4 mg \left(\frac{i_y^2}{i_y^2 + L^2} \right)$$

where:

P = tail skid load (N)

m = mass of the glider (kg)

g = acceleration of gravity (m/s^2)

i_y = radius of gyration of the glider (m)

L = distance between tail skid and glider c.g. (m)

(Change 522-1 (87-08-31))

522.483 One-wheel Landing Condition

If the two wheels of a main landing gear arrangement are laterally separated, the conditions under 522.479(a)(2), (b) and (c) must be applied also to each wheel separately taking into account limiting effects of bank. In the absence of a more rational analysis the limit kinetic energy must be computed as follows:

(amended 2007/07/16)

$$A = \frac{1}{2} m_{red} V_v^2$$

where:

$$m_{red} = m \frac{I}{I + \frac{a^2}{i_x^2}}$$

V_v = rate of descent

(amended 2007/07/16)

m = mass of the glider (kg)

a = half the track (m)

i_x = radius of gyration of the glider (m)

(Change 522-1 (87-08-31))

522.485 Side Load Conditions

A side load acting on one side of the main landing gear (both from right and left) normal to the plane of symmetry at the centre of the contact area of the tire or skid with the ground, must be assumed. The applied load is equal to $0.3 P_V$ and must be combined with a vertical load of $0.5 P_V$ where P_V is the vertical load determined in accordance with 522.473. (amended 2007/07/16)

522.497 Tail Skid Impact

(a) Except as provided in (b), if the c.g. of the unloaded glider in side view is situated behind the ground contact area of the main landing gear, the rear portion of the fuselage, the tail skid and the empennage must be designed to withstand the loads arising when the tail landing gear is raised to its highest possible position, consistent with the main wheel remaining on the ground, and is then released and allowed to fall freely.

(b) If the c.g. in all loading conditions is situated behind the ground contact area of the main landing gear (a) need not be applied.

522.499 Supplementary conditions for nose wheels

In determining the ground loads on the nose wheel and affected supporting structures, and assuming that the shock absorber and tyre are in their static positions, the following conditions must be met:

(a) For forward loads, the limit force components at the axle must be:

- (1) A vertical component of 2.25 times the static load on the wheel; and
- (2) A forward component of 0.4 times the vertical component.

(b) For side loads, the limit force components at the ground contact must be:

- (1) A vertical component of 2.25 times the static load on the wheel; and
- (2) A side component of 0.7 times the vertical component.

(Change 522-1 (87-08-31))

522.501 Wing-tip Landing

There must be means to ensure that ground loads acting at the wing tips are adequately resisted. A limit load $T=40$ daN must be assumed to act rearward at the point of contact of one wing-tip with the ground, in a direction parallel to the longitudinal axis of the glider, the yawing moment so generated must be balanced by side load R at the tail skid/wheel or nose skid/wheel (see Figure 4).

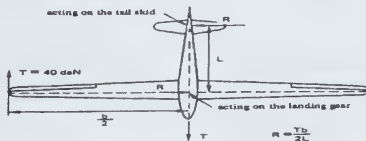


FIGURE 4 - WING-TIP LANDING

(Change 522-1 (87-08-31))

Emergency Landing Conditions

522.561 General

(a) The glider although it may be damaged in emergency landing conditions must be designed as prescribed in this paragraph to protect each occupant under those conditions.

(b) The structure must be designed to give each occupant every reasonable chance of escaping serious injury in a crash landing when proper use is made of belts and harnesses provided for in the design, in the following conditions:

(1) The occupant experiences, separately, ultimate inertia forces corresponding to the accelerations shown in the following:

Upward	7.5 g (amended 2010/05/27)
Forward	15.0 g (amended 2010/05/27)
Sideward	6.0 g (amended 2010/05/27)
Downward	9.0 g (amended 2010/05/27)

(2) An ultimate load of 9 times the weight of the glider acting rearwards and upward at an angle of 45° to the longitudinal axis of the glider and sideward at an angle of 5° acts on the forward portion of the fuselage at a suitable point not behind the pedals.
(amended 2010/05/27)

(c) Each glider with a retractable landing gear must be designed to protect each occupant in a landing with wheel(s) retracted under the following conditions:

(1) a downward ultimate inertia force corresponding to an acceleration of 3g;

(2) a coefficient of friction of 0.5 at the ground.

(d) Except as provided in 522.787, the supporting structure must be designed to restrain, under loads up to those specified in subparagraph (b)(1) of this paragraph each item of mass that could injure an occupant if it came loose in a crash landing.
(amended 2010/05/27)

(e) For a powered glider with the engine located behind and above the pilot's seat, an ultimate inertia load of 15g in the forward direction must be assumed.

(Change 522-1 (87-08-31))

Towing and Launching Loads**522.581 Aerotowing**

(a) The glider must be initially assumed to be in stabilized level flight at speed V_T with a cable load acting at the launching hook in the following directions:

- (1) horizontally forwards;
- (2) in plane of symmetry forwards and upwards at an angle of 20° with the horizontal;
- (3) in plane of symmetry forwards and downwards at an angle of 40° with the horizontal; and
- (4) horizontally forwards and sideways at an angle of 30° with the plane of symmetry.

(b) With the glider initially assumed to be subjected to the same conditions as specified in 522.581(a), the cable load due to surging suddenly increases to Q_{nom} assuming the use of a textile rope.

(amended 2007/07/16)

(1) The resulting cable load increment must be balanced by linear and rotational inertia forces. These additional loads must be superimposed on those arising from the conditions of 522.581(a).

(2) Q_{nom} is the rated ultimate strength of the towing cable (or weak link if employed). For the purpose of these requirements it must be assumed to be at not less than 1.3 times the glider maximum weight and not less than 500 daN.

522.583 Winch-launching

(a) The glider must be initially assumed to be in level flight at speed V_W with a cable load acting at the launching hook in a forward and downward direction at an angle ranging from 0° to 75° with the horizontal.

(amended 2007/07/16)

(b) The cable load must be determined as the lesser of the following two values:

(1) $1.2 Q_{nom}$ as defined in 522.581(b), or

(amended 2007/07/16)

(2) the loads at which equilibrium is achieved, with either:

- (i) the elevator fully deflected in upward direction, or
- (ii) the wing at its maximum lift.

A horizontal inertia force may be assumed to complete the equilibrium of horizontal forces.

(c) In the conditions of 522.583(a), a sudden increase of the cable load to the value of $1.2 Q_{nom}$ as defined in 522.581(b), is assumed. The resulting incremental loads must be balanced by linear and rotational inertia forces.

(amended 2007/07/16)

522.585 Strength of Launching Hook Attachment

(a) The launching hook attachment must be designed to carry a limit load of $1.5 Q_{nom}$, as defined in 522.581(b), acting in the directions specified in 522.581 and 522.583.
(amended 2007/07/16)

(b) The launching hook attachment must be designed to carry a limit load equal to the maximum weight of the glider, acting at an angle of 90° to the plane of symmetry.

Other Loads**522.591 Rigging and De-rigging Loads**

A rigging limit load of plus and minus twice the wing-tip reaction, determined when either a semi-span wing is simply supported at root and tip or when the complete wing is simply supported at the tips, where this would be representative of the rigging procedure, must be assumed to be applied at the wing tip and reacted by the wing when supported by a reaction and couple at the wing root.

(Change 522-1 (87-08-31))

522.593 Hand Forces at the Horizontal Tail Surfaces

A limit hand force of 3% of the design maximum weight of the glider but not less than 15 daN must be assumed to act on either tip of the horizontal tail surface:

(a) in the vertical direction;

(b) in the horizontal direction, parallel to the longitudinal axis.

(Change 522-1 (87-08-31))

522.595 Load on the Attachment Point of the Parachute Ripcord

The attachment point for the parachute ripcord (if provided) must be designed for a limit load of 300 daN acting in all possible directions.

522.597 Loads from single masses

The attachment means for all single masses, which are part of the equipment of the glider, must be designed to withstand loads corresponding to the maximum design load factors to be expected from the established flight and ground loads.

**SUBCHAPTER D
DESIGN AND CONSTRUCTION****522.601 General**

The suitability of each questionable design detail and part having an important bearing on safety in operations must be established by test.

522.603 Materials

The suitability and durability of materials used for parts, the failure of which could adversely affect safety, must -

(a) be established by experience or tests; and

(b) meet approved specifications that ensure their having the strength and other properties assumed in the design data.

522.605 *Fabrication Methods*

The methods of fabrication used must produce consistently sound structures. If a fabrication process (such as gluing, spot welding, heat-treating, or processing of plastic materials) requires close control to reach this objective, the process must be performed under an approved process specification.

522.607 *Locking of Connections*

An approved means of locking must be provided on all connecting elements in the primary structure and in control and other mechanical systems which are essential to safe operation of the glider. In particular self-locking nuts may not be used in any bolt subject to rotation in operation, unless a non-friction locking device is used in addition to the self-locking device.

522.609 *Protection of Structure*

Each part of the structure must

(a) be suitably protected against deterioration or loss of strength in service due to any cause, including

- (1) weathering;
- (2) corrosion; and
- (3) abrasion; and

(b) have adequate provisions for ventilation and drainage.

522.611 *Accessibility*

Means must be provided to allow:

(amended 2000/11/25)

(a) inspection of principal structural elements and control systems;

(amended 2000/11/25)

(b) replacement of parts normally requiring replacement; and

(amended 2000/11/25)

(c) adjustment and lubrication as necessary for continued airworthiness.

(amended 2000/11/25)

The means of inspection must be practicable for the inspection intervals established for the item during certification. This must be stated in the Maintenance Manual required under 522.1529.

(amended 2000/11/25)

522.612 *Provisions for Rigging and De-rigging*

The design of the glider must be such that during rigging and derigging by untrained persons, the probability of damage or permanent deformation, especially when this is not

readily visible, is extremely remote. Incorrect assembly must be avoided by proper design provisions.

It must be possible to inspect the glider easily for correct rigging.

522.613 *Material Strength Properties and Design Values*

(a) Material strength properties must be based on enough tests to establish design values on a statistical basis.

(b) The design values must be chosen so that the probability of any structure being understrength because of material variations is extremely remote.

(c) Where the temperature attained in an essential component or structure in normal operating conditions has a significant effect on strength, that effect must be taken into account.

522.619 *Special factors*

(a) The factor of safety prescribed in 522.303 must be multiplied by appropriate combinations of the special factors prescribed in 522.621 through 522.625, 522.657, 522.693 and 522.619(b).

(b) For each part of the structure not covered by 522.621 through 522.625, 522.657 and 522.693 but whose strength is

- (1) uncertain;
- (2) likely to deteriorate in service before normal replacement; or
- (3) subject to appreciable variability because of uncertainties in manufacturing processes or inspection methods; the special factor must be chosen so that failure of the part due to inadequate strength is improbable.

522.621 *Casting factors*

For castings the strength of which is substantiated by at least one static test and which are inspected by visual methods, a casting factor of 2.0 must be applied. This factor may be reduced to 1.25 providing the reduction is substantiated by tests on not less than three sample castings and if these and all production castings are subjected to an approved visual and radiographic inspection or an approved equivalent non-destructive inspection method.

522.623 *Bearing factors*

(a) The factor of safety for bearings at bolted or pinned joints must be multiplied by a special factor of 2.0 to provide for:

- (1) relative motion in operation; and
- (2) joints with clearance (free fit) subject to pounding and/or vibration.

(b) For control surface hinges and control system joints, compliance with the factors prescribed in 522.657 and 522.693, respectively, meets subparagraph (a) of this paragraph.

522.625 *Fitting factors*

For each fitting (a part or terminal used to join one structural member to another), the following apply:

(a) For each fitting whose strength is not proven by limit and ultimate load tests in which actual stress conditions are simulated in the fitting and surrounding structures, a fitting factor of at least 1.15 must be applied to each part of -
(amended 2007/07/16)

- (1) the fitting;
- (2) the means of attachment; and
- (3) the bearing on the joined members.

(b) No fitting factor need be used for joint designs based on comprehensive test data (such as continuous joints in metal plating, welded joints, and scarf joints in wood).

(c) For each integral fitting, the part must be treated as a fitting up to the point at which the section properties become typical of the member.

(d) For each seat, safety belt, and harness, its attachment to the structure must be shown, by analysis, tests, or both, to be able to withstand the inertia forces prescribed in 522.561 multiplied by a fitting factor of 1.33.

(e) When using only two hinges at each control surface, or wing-flap, the safety factor for these hinges and the attached parts of the primary structure must be multiplied by a factor of 1.5.

522.627 Fatigue strength

The structure must be designed, as far as practicable, to avoid points of stress concentration where variable stresses above the fatigue limit are likely to occur in normal service.

522.629 Flutter

(a) The glider must be free from flutter, aerofoil divergence, and control reversal in each configuration and at each appropriate speed up to at least V_D . Sufficient damping must be available at any appropriate speed so that aeroelastic vibration dies away rapidly.

(b) Compliance with subparagraph (a) must be shown by:

(1) a ground vibration test which includes an analysis and an evaluation of the established vibration modes and frequencies for the purpose of recognizing combinations critical for flutter, either by:

- (i) an analytical method, which will determine any critical speed in the range up to $1.2 V_D$, or
- (ii) any other approved method.

(2) systematic flight tests to induce flutter at speeds up to V_{DF} . These tests must show that a suitable margin of damping is available and that there is no rapid reduction of damping as V_{DF} is approached.

(3) Flight tests to show that when approaching V_{DF} :

- (i) control effectiveness around all three axes is not decreasing in an unusually rapid manner, and

(ii) no signs of approaching aerofoil divergence of wings, tail-plane and fuselage result from the trend of the static stabilities and trim conditions.

Control Surfaces

522.655 Installation

(a) Movable control surfaces must be installed so that there is no interference between any surfaces or their bracings when one surface is held in any position and the others are operated through their full angular movement. This requirement must be met:

(1) under limit load (positive or negative) conditions for all control surfaces through their full angular range; and

(2) under limit load on the glider structure other than control surfaces.

(b) If an adjustable stabilizer is used, it must have stops that will limit its range of travel to that allowing safe flight and landing.

522.657 Hinges

(a) Control surface hinges, except ball and roller bearing hinges, must have a factor of safety of not less than 6.67 with respect to the ultimate bearing strength of the softest material used as a bearing.

(b) For ball or roller bearing hinges, the approved rating of the bearing may not be exceeded.

(c) Hinges must have enough strength and rigidity for loads parallel to the hinge line.

522.659 Mass Balance

The supporting structure and the attachment of concentrated mass balance weights used on control surfaces must be designed for

(a) 24 g normal to the plane of the control surface;

(b) 12 g fore and aft; and

(c) 12 g parallel to the hinge line.

Control Systems

522.671 General

Each control must operate easily, smoothly, and positively enough to allow proper performance of its functions.

522.675 Stops

(a) Each control system must have adjustable stops that positively limit the range of motion of each movable aerodynamic surface controlled by the system.

(b) Each stop must be located so that wear, slackness, or take up adjustments will not adversely affect the control characteristics of the glider because of a change in the range of surface travel.

(c) Each stop must be able to withstand any loads corresponding to the design conditions for the control system.

522.677 Trim System

(a) Proper precautions must be taken to prevent inadvertent, improper, or abrupt trim tab operation. There must be means near the trim control to indicate to the pilot the direction of trim control movement relative to glider motion. In addition, there must be means to indicate to the pilot the position of the trim device with respect to the range of adjustment. This means must be visible to the pilot and must be located and designed to prevent confusion.

(b) Tab controls must be irreversible unless the tab is properly balanced and has no unsafe flutter characteristics.

Irreversible tab systems must have adequate rigidity and reliability in the portion of the system from the tab to the attachment of the irreversible unit to the glider structure.

522.679 Control System Locks

If there is a device to lock the control system on the ground, there must be means to -

- (a) give unmistakable warning to the pilot when the lock is engaged; and
- (b) prevent the lock from engaging in flight.

522.683 Operation Tests

It must be shown by functional tests that the system designed to the loads specified in 522.397 is free from:

- (a) jamming;
- (b) excessive friction; and
- (c) excessive deflection;

when operating the controls from the cockpit.

522.685 Control System Details

(a) Each detail of each control system must be designed and installed to prevent jamming, chafing, and interference from baggage, passengers, loose objects, or the freezing of moisture.

(b) There must be means in the cockpit to prevent the entry of foreign objects into places where they would jam the system.

(c) There must be means to prevent the slapping of cables or rods against other parts.

(d) Each element of the flight control system must have design features, or must be distinctively and permanently marked, to minimize the possibility of incorrect assembly that could result in malfunctioning of the control system.

(e) In gliders certificated for aerobatic manoeuvres, where necessary the rudder pedals must be provided with loops to prevent the feet from slipping off the pedals.

522.687 Spring Devices

The reliability of any spring device used in the control system must be established by tests simulating service conditions unless failure of the spring will not cause flutter or unsafe flight characteristics.

522.689 Cable Systems

(a) Each cable, cable fitting, turnbuckle, splice, and pulley used must meet approved specifications. In addition

(1) no cable smaller than 3 mm diameter may be used in primary systems;

(2) each cable system must be designed so that there will be no hazardous change in cable tension throughout the range of travel under operating conditions and temperature variations; and

(3) there must be means for visual inspection at each fairlead, pulley, terminal, and turnbuckle. The need for this requirement may be waived when it can be shown that airworthiness will not be affected within the service life of these components.

(b) Each kind and size of pulley must correspond to the cable with which it is used. Each pulley must have closely fitted guards to prevent the cables from being misplaced or fouled, even when slack. Each pulley must lie in the plane passing through the cable so that the cable does not rub against the pulley flange.

(c) Fairleads must be installed so that they do not cause a change in cable direction of more than 3°, except where tests or experience indicate that a higher value would be satisfactory. The radius of curvature of fairleads must not be smaller than the radius of a pulley for the same cable.

(d) Turnbuckles must be attached to parts having angular motion in a manner that will positively prevent binding throughout the range of travel.

(e) Tab control cables are not part of the primary control system and may be less than 3 mm diameter in gliders that are safely controllable with the tabs in the most adverse positions.

522.693 Joints

Control system joints (in push-pull systems) that are subject to angular motion, except those in ball and roller bearing systems, must have a special factor of safety of not less than 3.33 with respect to the ultimate bearing strength of the softest material used as a bearing. This factor may be reduced to 2.0 for joints in cable control systems. For ball or roller bearings, the approved ratings may not be exceeded.

522.697 Wing-flap and Air-brake Controls

(a) Each wing-flap control must be designed so that, when the wing-flap has been placed in any position upon which compliance with the performance requirements of this Chapter is based, the wing-flap will not move from that position except when:

(1) the control is adjusted; or

(2) the wing-flap is moved by the automatic operation of a wing-flap load limiting device; or

(3) movement other than in accordance with (1) or (2) is demonstrated not to be hazardous.

(b) Each wing-flap and air brake must be designed to prevent inadvertent extension or movement. The pilot forces and the rate of movement at any approved flight speed must not be such as to impair the operating safety of the glider.

(c) The air brake or other drag increasing device necessary to show compliance with 522.73 and/or 522.75 must comply with the following:

- (1) Where the device is divided into several parts, all parts must be operated by a single control.
- (2) It must be possible to extend the device at any speed up to $1.05 V_{NE}$ and to retract the device at any speed up to V_T , but not less than $1.8 V_{SI}$, with a hand force not exceeding 20 daN.
(amended 2007/07/16)
- (3) The time required for extension as well as retraction of the device may not exceed 2 seconds.

(Change 522-1 (87-08-31))

522.699 Wing-flap Position Indicator

There must be means near the wing-flap control to indicate to the pilot the position of the wing-flaps during and after operation.

522.701 Wing-flap Position Indicator

The motion of wing-flaps on opposite sides of the plane of symmetry must be synchronized by a mechanical interconnection unless the glider has safe flight characteristics with the wing-flaps retracted on one side and extended on the other.

522.711 Release Mechanisms

(a) Release mechanisms to be used for winch-launching must be so designed and installed as to release the towing cable automatically (i.e. to back-release) if the glider overruns the cable while it is carrying any appreciable load.

(b) The release mechanisms must be approved.

(c) It must be extremely improbable for bolts or other projections on the release mechanism itself or the structure surrounding the mechanism, including the landing gear, to foul the towing cable or its parachute.

(d) It must be shown that the release force will not exceed that prescribed in 522.143(c) when a cable load Q_{nom} is applied in any direction (see 522.583), and that the release mechanism functions properly under any operating condition.

(amended 2007/07/16)

(e) The range of travel of the release lever in the cockpit, including free travel, must not exceed 120 mm.

(f) The release lever in the cockpit must be arranged and designed so that the pilot force as defined in 522.143(c) can be easily applied.

(g) A visual inspection of the release mechanism must be easily possible.

522.713 Launching hook

Depending on the launching method(s) for which certification is requested, the glider must be fitted with one or more launching hooks complying with the following:

(a) Each hook to be used for aerotow launching must be

(1) Designed to minimise the possibility of inadvertent release, and;

(2) Installed to minimise the possibility of dangerous upsets during aerotowing (see 522.151(a)(3) and to produce a nose-down pitching moment on the glider under the conditions of 522.581 (a)(3), but with an angle of not more than 25°.

(amended 2007/07/16)

(b) Each hook to be used for winch and/or auto-tow launching must be equipped with a release device which is automatically activated when the glider overflies the towing winch or auto-tow vehicle.

(c) The release control system must be designed to actuate the release mechanism of each launching hook at the same time, where more than one launching hook is fitted.

(Change 522-2 (93-06-30))

Landing Gear

522.721 General

(a) The glider must be so designed that it can land on unprepared soft ground without endangering its occupants.

(b) Each glider fitted with retractable landing gear must be designed and constructed so that normal landings with the landing gear retracted are possible.

(c) The design of wheels, skids and tail skid and their installation must be such as to minimize the possibility of fouling by the towing cable.

(d) If the main landing gear consists only of one or more wheels, the glider must be equipped with mechanical braking devices, such as wheel brakes.

(e) A shock-absorbing element must be fitted to the tail skid.

522.723 Shock Absorption Test

The proof of sufficient shock absorption capacity must be determined by test. The landing gear must be able to absorb 1.44 times the energy described in 522.473 without failure although it may yield during the test.

(amended 2007/07/16)

522.725 Level Landing

(a) The shock absorbing elements (including tires) must be capable of absorbing the kinetic energy developed in a landing without being fully depressed.

(b) The value of kinetic energy must be determined under the assumption that the weight of the glider corresponds to the design maximum weight with a constant rate of descent equalling the value given in 522.473(b) and the wing lift balancing the weight of the glider.

(amended 2007/07/16)

(c) Under the assumption of (b) the c.g. acceleration must not exceed 4.5 g.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

522.729 Retracting Mechanism

(a) Each landing gear retracting mechanism and its supporting structure must be designed for the maximum flight load factors occurring with the gear retracted.

(b) For retractable landing gears it must be shown that extension and retraction of the landing gear are possible without difficulty up to V_{LO} .

(amended 2007/07/16)

(c) A glider equipped with a non-manually operated landing gear must have an auxiliary means of extending the gear.

522.731 Wheels and Tires

(a) Each landing gear main wheel must be approved.

(b) The maximum limit load rating of each wheel must equal or exceed the maximum radial limit load determined under the applicable ground load requirements. Each individual wheel of twin and tandem landing gears must be designed to support 70% of the maximum allowable weight.

Cockpit Design**522.771 General**

(a) The cockpit and its equipment must allow each pilot to perform his duties without unreasonable concentration or fatigue.

(b) A means must be provided to enable ballast provided in accordance with 522.31(c) to be stowed safely in the glider.

522.773 Cockpit view

Each cockpit must be free from glare and reflections that could interfere with the pilot's vision, and designed so that:

(a) the pilot's vision is sufficiently extensive, clear and undistorted for safe operation; and

(b) each pilot is protected from the elements. Rain and icing may not unduly impair his view along the flight path in normal flight and during landing.

522.775 Windshields and windows

(a) Windshields and windows must be constructed of a material that will not result in serious injuries due to splintering.

(b) Windshields and side windows of the canopy must have a luminous transmittance value of at least 70% and must not significantly alter the natural colours.

522.777 Cockpit controls

(a) Each cockpit control must be located to provide convenient operation, and to prevent confusion and inadvertent operation.

(b) The controls must be located and arranged so that the pilot, when strapped in his seat, has full and unrestricted movement of each control without interference from either his clothing (including winter clothing) or from the cockpit structure. The pilot must be able to operate all the controls necessary for the safe operation of the glider from the seat designated

to be used for solo flying.
(amended 2000/11/25)

(c) In gliders with dual controls it must be possible to operate the following secondary controls from each of the two pilots' seats:

- (1) release mechanism;
- (2) air brakes;
- (3) wing-flaps;
- (4) trim;
- (5) opening and jettisoning device of the canopy;
- (6) throttle lever.

(d) Controls must maintain any desired position without requiring constant attention by the pilot(s), and must not tend to creep under system loads or vibration. A means of adjusting the freedom of operation of the throttle control during flight to achieve this, must be provided. Controls must have adequate strength to withstand loads without failure or excessive deflection.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.779 Motion and Effect of Cockpit Controls

Cockpit controls must be designed so that they operate as follows:

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

Controls	Motion And Effect
Aileron	Right (clockwise) for right wing down
Elevator	Rearward for nose up
Rudder	Right pedal forward for nose right
Trim	Corresponding to sense of motion of the controls
Air brakes	Pull to extend
Wing-flaps	Pull for wing-flaps down or extended
Towing cable release	Pull to release
Canopy jettisoning	Not prescribed - preferably pull to jettison
Throttle control	Forward to increase power
Propeller pitch	Forward to increase (r.p.m.)
Mixture	Forward, or up for rich
Carburettor air heat or alternate air (amended 2000/11/25)	Forward or upward for cold, or alternate air off (amended 2000/11/25)

522.780 Colour Marking and Arrangement of Cockpit Controls

Cockpit controls must be marked and located as follows:

Control	Colour	Location
Towing cable release	yellow	for left hand operation
Air brakes	blue	for left hand operation, or in the case of a two-seat glider
Trimmer (longitudinal trim only)	green	preferably for left hand operation
Canopy operating handle	white*	not prescribed
Canopy jettison handle	red*	not prescribed but must be within easy reach
Other controls	to be clearly marked but not yellow, blue, green, white or red	
* If canopy opening and jettison are combined in one handle, the colour must be red.		

522.781 Cockpit Control Knob Shape

The towing cable release control must be so designed to be capable of operation by a gloved hand exerting the force specified in 522.143(c).

(Change 522-2 (93-06-30))

522.785 Seats and Safety Harnesses

(a) Each seat and its supporting structure must be designed for an occupant weight in accordance with 522.25(a)(2) and for the maximum load factors corresponding to the specified flight and ground conditions including the emergency landing conditions prescribed in 522.561. Each seat and its supporting structure must also be designed to withstand the reaction to the load specified in 522.397(b).

(b) Seats including cushions must not deform to such an extent that the pilot when subjected to loads corresponding to 522.581 and 522.583, is unable to reach the controls safely, or that the wrong controls are operated.

(c) Each seat in a glider must be designed so that an occupant is comfortably seated, whether he wears a parachute or not. The seat design must allow the accommodation of a parachute worn by an occupant.

(d) The strength of the safety harness must not be less than that following from the ultimate loads for the flight and ground load conditions and for the emergency landing conditions according to 522.561(b) taking into account the geometry of the harness and seat arrangement.

(e) Each safety harness installation must be designed so that each occupant is safely retained in his initial sitting or reclining position under any acceleration occurring in operation.

(amended 2003/01/15)

(f) Each seat and safety harness installation must be designed to give each occupant every reasonable chance of escaping serious injury under the condition of 522.561(b)(1) and 522.561(b)(2).

(amended 2010/05/27)

522.786 Protection from Injury

(a) Rigid structural members or rigidly mounted items of equipment, must be padded where necessary to protect the occupant(s) from injury during minor crash conditions.

(b) Structural members, which by the nature of their size or shape are capable of piercing the instrument panel, must be designed or positioned such that injury to occupants is unlikely, under the conditions of 522.561(b)(2).

(Change 522-1 (87-08-31))

522.787 Baggage Compartment

(a) Each baggage compartment must be designed for its placarded maximum weight of contents and for the critical load distributions at the appropriate maximum load factors corresponding to the flight and ground load conditions of this Chapter.

(b) Means must be provided to protect occupants from injuries by movement of the contents of baggage compartments under an ultimate forward acceleration of 15.0 g.
(amended 2010/05/27)

522.788 Headrests

(amended 2003/01/15)

(a) A headrest must be provided to protect each occupant from rebound injuries in the event of a crash landing. It must be equipped with energy absorbent padding protected against wear and weathering encountered in normal operation. If an adjustable headrest is provided it must be capable of being positioned such that the point of head contact is at eye level.
(amended 2003/01/15)

(b) Each headrest must be so designed to minimize the possibility of clothing or the parachute becoming caught when bailing out.
(amended 2003/01/15)

(c) Each headrest in its most critical position must be designed for an ultimate load of at least 135 daN normal to a vertical plane which touches the contact point of the head.
(amended 2003/01/15)

(d) The width and design of the headrest must not unduly restrict vision from either seat.
(amended 2003/01/15)

522.807 Emergency Exit

(a) The cockpit must be so designed that unimpeded and rapid escape in emergency situations during flight and in any normal or crash attitude on the ground is possible with the occupant wearing a parachute.
(amended 2012/03/27)

(b) The opening and where appropriate, jettisoning, of each canopy or emergency exit must not be prevented by the presence of the appropriate aerodynamic forces and/or the weight of the canopy at speeds up to V_{DF} or by jamming of the canopy with other parts of the glider. The canopy or emergency exit attachment fittings must be designed to permit easy jettisoning, where jettisoning is a necessary feature of the design.

(c) The opening system must be designed for simple and easy operation. It must function rapidly and be designed so that it can be operated by each occupant strapped in his seat and also from outside the cockpit.

(d) A canopy or emergency exit jettison system must be actuated by not more than two controls, either or both of which must remain in the open position. The canopy jettisoning controls must be capable of being operated with a pilot effort of between 5 and 15 daN. If two controls are used they must both move in the same sense to jettison the canopy. If there are controls for each pilot, both controls or sets of controls must move in the same sense. If a single control is used for jettisoning, it must be designed to minimise the risk of inadvertent or unintentional operation towards the jettison position.

(e) In order to enable the occupants to bail out under acceleration conditions, sufficiently strong cabin parts, or grab-handles, must be available and suitably located so that the occupants can lift themselves out of their seats and support themselves. These parts must be designed to an ultimate load of at least 200 daN in the anticipated direction of force application.

(Change 522-2 (93-06-30))

522.831 Ventilation

(a) The cockpit must be designed so as to afford suitable ventilation under normal flying conditions.

(b) Carbon monoxide concentration must not exceed one part per 20,000 parts air.

(Change 522-1 (87-08-31))

522.857 Electrical Bonding

(a) Electrical continuity must be provided to prevent the existence of differences of potential between components of the powerplant including fuel and other tanks, and other significant parts of the powered glider which are electrically conductive.

(b) If the glider is equipped for winch or auto launching, electrical continuity must be provided between the metallic parts of the cable release mechanism and the control column.

(c) The cross-sectional area of bonding connectors, if made from copper, must be less than 1.33 mm^2 .

(Change 522-1 (87-08-31))

522.881 Ground Handling

There must be reliable carrying and lifting provisions for the glider.

522.883 Ground Clearance

(a) There must be at least 0.10 m of ground clearance for the tail-plane with the wing-tip touching the ground.

(b) With the wing-tip touching the ground, the associated aileron may not touch the ground when deflected fully down.

522.885 Fairings

Removable fairings must be positively attached to the structure.

522.891 Water Ballast Tanks: General
(amended 2007/07/16)

Each water ballast tank, its surrounding structure, hoses, valves and fittings, must be able to withstand, without failure, the vibration, inertia, fluid head (partial and full tank, wing deflections in flight and filling procedures) loads from filling procedures and structural loads that may be encountered in service.
(amended 2007/07/16)

522.892 Water Ballast Tanks: Tests
(amended 2007/07/16)

Unless loads from 522.891 are higher each water tank including hoses, valves and fittings, must be able to withstand a pressure of 0.20 bar without failure or leakage.
(amended 2007/07/16)

522.893 Water Ballast Tank Installation
(amended 2007/07/16)

(a) *General.* The surrounding aircraft structure must be appropriately protected from any likely damage (corrosion, debonding, etc.) from water ballast leaks.
(amended 2007/07/16)

(b) Water ballast tanks which are not an integral part of the structure must be supported so that the loads resulting from the mass of the water ballast are not concentrated. In addition:
(amended 2007/07/16)

(1) Means must be provided to prevent chafing between each tank and the supporting structure.
(amended 2007/07/16)

(2) Each tank compartment must be vented and drained.
(amended 2007/07/16)

(c) For integral tanks the surrounding structure must either be shown to be impervious to ballast absorption, or suitably protected.
(amended 2007/07/16)

522.894 Water Ballast Tank Vents
(amended 2007/07/16)

Integral and other non flexible tanks must be vented.
(amended 2007/07/16)

522.895 Water Ballast System
(amended 2007/07/16)

(a) The water ballast control and jettison system must be designed so that any single malfunction will not produce a lateral or longitudinal movement of the centre of gravity that prevents continued safe flight and landing.
(amended 2007/07/16)

(b) Water contamination of the pitot/static system, or water collection in any parts of the glider where it could cause corrosion or produce significant centre of gravity changes, must be prevented.

(amended 2007/07/16)

522.896 Water Ballast Drains

(amended 2007/07/16)

There must be means to allow drainage of the entire water ballast system with the glider in the normal ground attitude.

(amended 2007/07/16)

522.897 Water Ballast Additives

(amended 2007/07/16)

If water ballast additives are permitted by the Flight Manual, they must be shown to have no adverse or damaging effects on structure or systems critical to flight safety.

(amended 2007/07/16)

SUBCHAPTER E POWERPLANT GENERAL

522.901 Installation

(a) For the purpose of this Chapter 522, the glider powerplant installation includes each component that -

- (1) is necessary for propulsion; and
- (2) affects the safety of the propulsive unit.

(b) The powerplant must be constructed, arranged and installed to-

- (1) insure safe operation; and
- (2) be accessible for necessary inspections and maintenance.

(Change 522-1 (87-08-31))

522.902 Installation: Gliders with Retractable Powerplants or Propellers

Powered gliders with retractable powerplants or propellers must comply with the following:

(a) Retraction and extension must be possible without risk of damage and without the use of exceptional skill or effort or excessive time.

(b) It must be possible to secure the retraction (extension) mechanism in the extreme positions. There must be a means to inform the pilot that this mechanism is secured in the fully retracted or extended position.

(c) Any doors associated with extension and retraction must not impair extension and retraction and they must be restrained against spontaneous opening.

(d) The installation must be so designed as to prevent the heat of the engine from causing a fire or other hazardous condition.

(e) Fuel or lubricant must not discharge in dangerous quantities from the engine, its components or accessories, when the powerplant is in the retracted position and during extension and retraction.

522.903 Engines

(a) The engine must be type approved or otherwise approved in accordance with Subchapter H.

(b) Restarting of the engine in flight must be possible.

522.905 Propellers

The propeller must be type approved or otherwise approved in accordance with Subchapter J.

522.925 Propeller Clearance

If an unshrouded propeller is to be installed, propeller clearances with the powered glider at maximum weight, with the most adverse c.g. and with the propeller in the most adverse pitch position, may not be less than the following:

(a) *Ground clearance.* There must be a clearance of at least 180 mm (for a powered glider with a nose-wheel landing gear) or 230 mm (for a powered glider with a tail-wheel landing gear) between the propeller and the ground, with the landing gear statically deflected and in the level attitude, normal take-off attitude or taxiing attitude, whichever is most critical. In addition, there must be positive clearance between the propeller and the ground in the level take-off attitude, with:

(1) the critical tire completely deflated and the corresponding landing gear strut statically deflected; and

(2) the critical landing gear strut bottomed and the corresponding tire statically deflected.

(b) *Structural clearance.* There must be:

(1) At least 25 mm radial clearance between the blade tips and the glider structure, plus any additional radial clearance necessary to prevent harmful vibration;

(2) At least 13 mm longitudinal clearance between the propeller blades or cuffs and stationary parts of the glider; and

(3) Positive clearance between other rotating parts of the propeller or spinner and stationary parts of the glider.

(Change 522-1 (87-08-31))

Fuel System

522.951 General

(a) Each fuel system must be constructed and arranged to ensure a flow of fuel at a rate and pressure established for proper engine functioning under any normal operating condition.

(b) Each fuel system must be arranged so that no fuel pump can draw fuel from more than one tank at a time. Gravity feed systems may not supply fuel to the engine from more than one tank at a time, unless the air spaces are interconnected in a manner to ensure that all interconnected tanks feed equally.

522.955 Fuel Flow

(a) *Gravity systems.* The fuel flow rate for gravity systems (main and reserve supply) must be 150% of the take-off fuel consumption of the engine.

(b) *Pump systems.* The fuel flow rate for each pump system (main and reserve supply) must be 125% of the take-off fuel consumption of the engine at the maximum power established for take-off.

522.959 Unusable Fuel

The unusable fuel supply for each tank must be established as not less than that quantity at which the first evidence of malfunctioning occurs under the most adverse fuel feed conditions occurring during take-off, climb, approach and landing involving that tank.

522.963 Fuel Tanks: General

(a) Each fuel tank must be able to withstand, without failure, the vibration, inertia, fluid and structural loads that it may be subjected to in operation.

(b) Each flexible fuel tank must be of an acceptable kind.

522.965 Fuel Tank Tests

(a) Each fuel tank must be able to withstand the following pressures without failure or leakage;

(1) for each conventional metal tank and non-metallic tank with walls not supported by the glider structure, a pressure of 0.25 bar;

(2) for each non-metallic tank with walls supported by the glider structure and constructed in an acceptable manner using acceptable basic tank material, and with actual or simulated support conditions, a pressure of 0.14 bar for the first tank of a specific design.

522.967 Fuel tank installation

(a) Each fuel tank must be supported so that the loads resulting from the weight of the fuel are not concentrated. In addition:

(1) there must be pads, if necessary, to prevent chafing between each tank and its supports; and

(2) materials employed for supporting the tank or padding the supporting members must be non-absorbent or treated to prevent the absorption of fuel.

(b) Each tank compartment must be ventilated and drained to prevent accumulation of flammable fluids and vapours. Each compartment adjacent to a tank must be treated in a similar manner.

(c) No fuel tank may be located on the engine side of the firewall. There must be at least 15 mm of clearance between the fuel tank and the firewall.

(d) If the fuel tank is installed in the personnel compartment, it must be demonstrated that adequate ventilation and drainage are provided, that the presence of the tank will in no way interfere with the operation of any part of the powered glider, or the normal movement of occupants, and that no leaking fuel will fall directly on to any occupant.

(e) Fuel system components which could cause leakage of fuel as a result of a wheels-up landing must be suitably protected from damage.

522.969 Fuel Tank Expansion Space

Each fuel tank must have an expansion space of sufficient capacity, but of not less than 2% of the tank capacity, to prevent spillage of fuel onto the surfaces of the glider due to thermal expansion, sloping ground or any normal ground attitude or manoeuvre, unless the design of the venting system precludes such spillage. It must not be possible to fill the expansion space inadvertently with the powered glider in any normal ground attitude.

(Change 522-2 (93-06-30))

522.971 Fuel Tank Sump

(a) Each fuel tank must have a drainable sump with an effective capacity, in the normal ground and flight attitudes, of 0.10% of the tank capacity, or 120 cm³, whichever is the greater, unless -

(amended 2007/07/16)

(1) the fuel system has a sediment bowl or chamber that is accessible for drainage and has a capacity of 25 cm³;

(2) Each fuel tank outlet is located so that, in the normal ground attitude, water will drain from all parts of the tank to the sediment bowl or chamber.

(b) The drainage system must be readily accessible and easy to drain.

(c) Each fuel system drain must have manual or automatic means for positive locking in the closed position.

522.973 Fuel tank filler connection

Fuel tank filler connections must be located outside personnel compartments, except where the fuel tank must be taken out of those compartments for refuelling. Spilled fuel must be prevented from entering the fuel tank compartment or any part of the powered glider other than the tank itself.

(Change 522-2 (93-06-30))

522.975 Fuel Tank Vents

Each fuel tank must be vented as close as practicable to the highest point of the tank installation, or from the top part of the expansion space where this is required to be provided. In addition:

(a) Each vent outlet must be located and constructed in a manner that minimizes the possibility of its being obstructed by ice or other foreign matter.

(b) Each vent must be constructed to prevent siphoning of fuel during normal operation.

(c) Each vent must discharge clear of the powered glider.

(Change 522-2 (93-06-30))

522.977 Fuel Strainer or Filter

- (a) There must be a fuel filter between the fuel tank outlet and the carburettor inlet (or an enginedriven fuel pump, if any).
- (b) There must be a finger strainer with 3 to 6 meshes per cm at the outlet of each fuel tank. The length of each strainer must be at least twice the diameter of the fuel tank outlet.
- (c) Each filter or strainer must be easily accessible for drainage and cleaning.

522.993 Fuel System Lines and Fittings

- (a) Each fuel line must be installed and supported to prevent excessive vibration and to withstand loads due to fuel pressure and accelerated flight conditions.
- (b) Each fuel line connected to components of the glider between which relative motion could exist must have provisions for flexibility.
- (c) Each flexible hose must be approved or must be shown to be suitable for the particular application.
- (d) Each fuel line and fitting in any area subject to engine fire conditions must be at least fireresistant.

522.995 Fuel Valves and Controls

- (a) There must be a means to allow the pilot to shut off rapidly in flight the fuel to the engine.
- (b) No shut-off valve may be on the engine side of any firewall.
- (c) The portion of the line between the fuel cock and the carburettor must be as short as possible.
- (d) Each fuel tank selector must
(amended 2007/07/16)

(1) Require a separate and distinct action to place the selector in the "OFF" position; and
(amended 2007/07/16)

(2) Have the tank selector positions located in such a manner that it is impossible for the selector to pass through the "OFF" position when changing from one tank to another.
(amended 2007/07/16)

Oil Systems

522.1011 General

- (a) If an engine is provided with an oil system, it must be capable of supplying the engine with an appropriate quantity of oil at a temperature not exceeding the maximum established as safe for continuous operation.
- (b) Each oil system must have a usable capacity adequate for the endurance of the powered glider.

522.1013 Oil Tanks

(a) Each oil tank must be installed to:

- (1) meet the requirements of 522.967(a), (b) and (d); and
- (2) withstand any vibration, inertia and fluid loads expected in operation.

(b) The oil level must be easy to check without having to remove any cowling parts (with the exception of oil tank access covers) or to use any tools.

(c) If the oil tank is installed in the engine compartment it must be made of fireproof material.

522.1015 Oil Tank Tests

Oil tanks must be subjected to the tests specified in 522.965 for fuel tanks, except that in the pressure tests a pressure of 0.35 bar must be applied.

522.1017 Oil Lines and Fittings

(a) Oil lines must comply with 522.993 and each oil line and fitting must be made of fireproof material.

(b) *Breather lines.* Breather lines must be arranged so that:

- (1) condensed water vapour or oil that might freeze and obstruct the line cannot accumulate at any point;
- (2) the breather discharge will not constitute a fire hazard if foaming occurs or cause emitted oil to strike the pilot's wind shields;
- (3) the breather does not discharge into the engine air induction system;
- (4) if the engine is retractable, there must be no discharge of oil from the breather line when the engine is completely retracted.

Cooling**522.1041 General**

The powerplant cooling provisions must be able to maintain the temperatures of powerplant components and engine fluids within the temperature limit established by the engine constructor during all likely operating conditions.

**522.1047 Cooling Test Procedure for
Reciprocating Engine Powered Gliders**

(a) To determine compliance with the requirement of 522.1041, a cooling test must be carried out as follows:

- (1) Engine temperatures must be stabilized in flight with the engine at not less than 75% of maximum continuous power.
- (2) After temperatures have stabilized, a climb must be begun at the lowest practical altitude and continued for one minute with the engine at take-off power.
- (3) At the end of one minute, the climb must be continued at maximum continuous power for at least 5 minutes after the occurrence of the highest temperature recorded.

(b) The climb required in (a) must be conducted at a speed not more than the best rate-of-climb speed with maximum continuous power.

(c) The maximum anticipated air temperature (hot-day conditions) is 38°C at sea-level. Above sea-level, the temperature decreases with a temperature gradient of 6.5°C per 1000m altitude. If the tests are conducted under conditions deviating from this value, the recorded temperatures must be corrected according to (d), unless a more rational method is applied.

(d) The temperatures of the engine fluids and of the powerplant components (with the exception of cylinder barrels) must be corrected by adding to them the difference between the maximum ambient anticipated air temperature and the temperature of the ambient air at the time of the first occurrence of the maximum recorded component or fluid temperature.

Induction System

522.1091 *Air Induction*

The air induction system for the engine must supply the air required by the engine under all likely operating conditions.

522.1093 *Induction system icing protection*

(a) Except as permitted by (b), each engine having a conventional venturi carburettor must be provided with a pre-heater capable, in air free of visible moisture at a temperature of -1°C, of increasing the intake air temperature by 50°C with the engine at 75% of maximum continuous power.

(b) Where the intake air is continuously heated, and it is demonstrated that the temperature rise is adequate, a pre-heater need not be provided.

522.1103 *Induction System Ducts*

(a) Each induction system duct must have a drain to prevent the accumulation of fuel or moisture in the normal ground and flight attitudes. No drain may discharge where it will cause a fire hazard.

(b) Each duct connected to components between which relative motion could exist must have means for flexibility.

(Change 522-1 (87-08-31))

522.1105 *Induction System Screens*

If induction system screens are used -

(a) each screen must be upstream of the carburettor;

(b) it must be impossible for fuel to strike the screen.

Exhaust System

522.1121 *General*

(a) The exhaust system must ensure safe disposal of exhaust gases without fire hazard or carbon monoxide contamination in any personnel compartment.

(b) Each exhaust system part with a surface hot enough to ignite flammable fluids or vapours must be located or shielded so that leakage from any system carrying flammable

fluids or vapours will not result in a fire caused by impingement of the fluids or vapours on any part of the exhaust system, including shields for the exhaust system.

(c) Each exhaust system component must be separated by fireproof shields from adjacent flammable parts of the glider that are outside the engine compartment.

(d) No exhaust gases may discharge dangerously near any oil or fuel system drain.

(e) No exhaust gases may be discharged where they will cause a glare seriously affecting pilot vision at night.

(f) Each exhaust system component must be ventilated to prevent points of excessively high temperature.

522.1125 Exhaust manifold

(a) The exhaust manifold must be fireproof and corrosion-resistant, and must have means to prevent failure due to expansion by operating temperature.

(b) The exhaust manifold must be supported to withstand the vibration and inertia loads to which it may be subjected in normal operation.

(c) Parts of the manifold connected to components between which relative motion could exist must have means for flexibility.

Powerplant Controls and Accessories

522.1141 General

The portion of each powerplant control located in the engine compartment that is required to be operated in the event of fire must be at least fire-resistant.

522.1145 Ignition Switches

(a) Each ignition circuit must be independently switched, and must not require the operation of any other switch for it to be made operative.

(b) Ignition switches must be arranged and designed to prevent inadvertent operation.

(c) The ignition switch must not be used as the master switch for other circuits.

522.1149 Propeller Speed and Pitch Controls

(a) Propeller speed and pitch must be limited to values that ensure safe operation under normal operating conditions. In addition:
(amended 2003/01/15)

(1) If there are propeller speed or pitch controls, their operation must not require undue attention or exceptional skill.

(amended 2003/01/15)

(2) For variable pitch propellers, provisions must be made for a positive indication that:

(amended 2003/01/15)

(i) the allowable pitch range for engine start, and

(amended 2003/01/15)

- (ii) the takeoff pitch position has been reached.
(amended 2003/01/15)

(b) Propellers that cannot be controlled in flight must meet the following requirements:

- (1) during take-off and initial climb at V_Y , the propeller must limit the engine rotational speed at full throttle to a value not greater than the maximum allowable take-off rotational speed, and
- (2) during a glide at V_{NE} with throttle closed or the engine inoperative, provided this has no detrimental effect on the engine, the propeller must not permit the engine to achieve a rotational speed greater than 110% of the maximum continuous speed.

(3) For powered gliders capable of extending and retracting the powerplant during a glide at V_{PE} with the throttle closed, the propeller must not permit the engine to achieve a rotational speed of more than 110% of the maximum continuous speed. V_{PE} must not be less than $1.4 V_{SI}$ where V_{SI} is the stalling speed with the wing flaps neutral at maximum weight.

(amended 2007/07/16)

(c) A propeller that can be controlled in flight but does not have constant speed controls must be so designed that -

- (1) 522.1149(b)(1) is met with the lowest possible pitch selected, and
- (2) 522.1149(b)(2) is met with the highest possible pitch selected.

(d) A controllable pitch propeller with constant speed controls must comply with the following requirements:

- (1) with the governor in operation, there must be a means to limit the maximum engine rotational speed to the maximum allowable take-off speed, and
- (2) with the governor inoperative, there must be a means to limit the maximum engine rotational speed to 103% of the maximum allowable take-off speed with the propeller blades at the lowest possible pitch and the powered glider stationary with no wind.

522.1163 Powerplant Accessories

(a) Each engine-driven accessory must -

- (1) be satisfactory for mounting on the engine concerned; and
- (2) use the provisions on the engine for mounting.

(b) Electrical equipment subject to arcing or sparking must be installed to minimize the probability of contact with any flammable fluids or vapours that might be present in a free state.

522.1165 Engine Ignition Systems

(a) Each battery ignition system must be supplemented by a generator that is automatically available as an alternative source of electrical energy to allow continued engine operation if any battery becomes depleted.

(b) The capacity of the batteries and generators must be large enough to meet the simultaneous demands of the engine ignition system and the greatest demands of any other electrical system components that draw from the same source.

(c) There must be a means to warn the pilot if, while the engine is running, malfunctioning of any part of the electrical system is causing continuous discharge of any battery used for engine ignition.

Powerplant Fire Protection

522.1191 Firewalls

(a) The engine must be isolated from the rest of the glider by a firewall, shroud or equivalent means.

(b) The firewall or shroud must be constructed so that no hazardous quantity of liquid, gas or flame can pass from the engine compartment to other parts of the glider.

(c) The firewall and shroud must be fireproof and protected against corrosion.

522.1193 Cowling and Nacelle

(a) Each cowling must be constructed and supported so that it can resist any vibration, inertia and air loads to which it may be subjected in operation.

(b) There must be a means for rapid and complete drainage of each part of the cowling in the normal ground and flight attitudes. No drain may discharge where it will cause a fire hazard.

(c) Cowling must be at least fire-resistant.

(d) Each part behind an opening in the engine compartment cowling must be at least fire-resistant for a distance of at least 600 mm aft of the opening.

(e) Each part of the cowling subjected to high temperatures due to its nearness to exhaust system ports or exhaust gas impingement, must be fireproof.

SUBCHAPTER F EQUIPMENT GENERAL

522.1301 Function and Installation

(a) Each item of required equipment must:

(1) be of a kind and design appropriate to its intended function;

(2) be labelled as to its identification, function, or operating limitations, or any applicable combination of these factors;

(3) be installed according to limitations specified for that equipment; and

(4) function properly when installed.

(b) Instruments and other equipment may not in themselves, or by their effect upon the glider, constitute a hazard to safe operation.

522.1303 Flight and Navigation Instruments

The following are required flight and navigation instruments:

(a) For all gliders:

(1) an air-speed indicator;

(2) an altimeter.

(b) *For Powered Gliders.* In addition to the instruments required in 522.1303(a):

(1) a magnetic direction indicator.

(c) *For Gliders of Category A.* In addition to the instruments required in 522.1303(a) and (b):

(1) an accelerometer capable of retaining maximum and minimum values of acceleration for any selected period of flight.

(d) *For gliders equipped for water ballast.* In addition to the instruments required in 522.1303(a), (b) and (c).

(amended 2007/07/16)

(1) An outside air temperature gauge.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-3 (94-04-30))

522.1305 Powerplant Instruments

The following are the required powerplant instruments for powered gliders:

(a) a tachometer;

(b) a fuel quantity indicator for each fuel tank;

(c) an oil temperature indicator except for two stroke engines;

(d) an oil pressure indicator or warning device except for two stroke engines;

(e) a cylinder head temperature indicator for each air-cooled engine when cowl flaps are used;

(f) an elapsed-time indicator;

(g) an oil quantity indicator for each tank, e.g. dipstick.

(h) a manifold pressure indicator for an engine equipped with a variable pitch propeller, where manifold pressure and rotational speed are independently controllable.

(amended 2003/01/15)

(i) *for pump-fed engines, one of the following instruments/procedures*

(amended 2007/07/16)

(1) a fuel pressure indicator;

(amended 2007/07/16)

(2) a low fuel pressure warning; or
(amended 2007/07/16)

(3) a special pre-flight procedure.
(amended 2007/07/16)

(Change 522-1 (87-08-31))

522.1307 Miscellaneous Equipment

An approved safety harness must be available to each occupant.

Instruments: Installation

522.1321 Arrangement and Visibility

Flight and navigation instruments must be clearly arranged and plainly visible to each pilot.

522.1322 Warning, Caution, and Advisory Lights

(amended 2000/11/25)

If warning, caution, or advisory lights are installed in the cockpit, they must, unless otherwise approved by the Minister, be:
(amended 2000/11/25)

(a) red, for warning lights (lights indicating a hazard which may require immediate corrective action);
(amended 2000/11/25)

(b) amber, for caution lights (lights indicating the possible need for future corrective action);
(amended 2000/11/25)

(c) green, for safe operation lights;
(amended 2000/11/25)

(d) any other colour, including white, for lights not described in 522.1322 (a) to (c), provided the colour differs sufficiently from the colours prescribed in 522.1322 (a) to (c) to avoid possible confusion; and
(amended 2000/11/25)

(e) effective under all probable cockpit lighting conditions.
(amended 2000/11/25)

522.1323 Airspeed Indicating System

(a) The airspeed indicating system must be calibrated to indicate true airspeed at sea level in standard atmosphere with a maximum pilotstatic error not exceeding ± 8 km/h or $\pm 5\%$ whichever is greater, throughout the following speed range $1.2 V_S$ to V_{NE} , and with wing-flaps neutral and air brakes closed.

(b) Calibration must be made in flight.

(c) The airspeed indicating system must be suitable for speeds between V_{SO}^{max} and at least 1.05 times V_{NE} .
(amended 2007/07/16)

522.1325 Static Pressure System

(a) Each instrument provided with static pressure case connections must be so vented that the influence of glider speed and the opening and closing of windows, moisture or other foreign matter will not significantly affect the accuracy of the instruments.

(b) The design and installation of a static pressure system must be such that:

(1) positive drainage of moisture is provided;

(2) chafing of the tubing, and excessive distortion or restriction at bends in the tubing, is avoided; and

(3) the materials used are durable, suitable for the purpose intended, and protected against corrosion.

522.1327 Magnetic Direction Indicator

(a) Each magnetic direction indicator required must be installed so that its accuracy is not excessively affected by the glider's vibration or magnetic fields.

(b) The compensated installation must not have a deviation in level flight, greater than 10° on any heading, except that when radio is in use or the engine of a powered glider is running, the deviation may exceed 10° but must not exceed 15° .

(Change 522-1 (87-08-31))

522.1337 Powerplant Instruments

(a) *Instruments and instrument lines*

(1) Each powerplant instrument line must meet the requirements of 522.993.

(2) Each line carrying flammable fluids under pressure must have restricting orifices or other safety devices at the source of pressure to prevent the escape of excessive fluid if the line fails.

(b) Each exposed sight gauge used as a fuel quantity indicator must be protected against damage.

(Change 522-1 (87-08-31))

Electrical Systems and Equipment**522.1353 Storage Battery Design and Installation**

(a) Each storage battery must be designed and installed as prescribed in this paragraph.

(b) No explosive or toxic gases emitted by any battery in normal operation, or as the result of any probable malfunction in the charging system or battery installation, may accumulate in hazardous quantities within the glider.

(c) No corrosive fluids or gases that may escape from the battery may damage surrounding structures or adjacent essential equipment.

522.1361 Master Switch Arrangement

(a) In powered gliders there must be a master switch arrangement to allow ready disconnection of electric power sources from the main bus. The point of disconnection must be adjacent to the sources controlled by the switch.

(b) The master switch or its controls must be so installed that the switch is easily discernible and accessible to the pilot.

(Change 522-1 (87-08-31))

522.1365 Electric cables and equipment

(a) Each electric connecting cable must be of adequate capacity and correctly routed, attached and connected so as to minimize the probability of short circuits and fire hazards.

(b) Overload protection must be provided for each electrical equipment. No protective device may protect more than one circuit essential to flight safety.

(c) Unless each cable installation from the battery to a circuit protective device or master switch, whichever is closer to the battery, is of such power-carrying capacity that no hazardous damage will occur in the event of a short circuit, this length of cable shall be so protected or routed in relation to parts of the powered glider that the risk of short circuit is minimised.

(Change 522-1 (87-08-31))

(Change 522-3 (93-06-30))

522.1385 External Lights

If external lights are to be installed they must be approved.

Miscellaneous Equipment**522.1431 ATC Airborne Equipment**

Each ATC airborne equipment provided must comply with the following:

(a) The equipment and its aerials may neither in themselves nor by their mode of operation or by their effect upon the operating characteristics of the glider and its equipment constitute a hazard to safe operation.

(b) The equipment and its control and monitoring devices must be arranged so as to be easily controllable. Their installation must be such that they are sufficiently ventilated to prevent overheating.

522.1441 Oxygen Equipment and Supply

(a) Oxygen equipment must be approved.

(b) Oxygen equipment must be free from hazards in itself, in its method of operation, and its effect upon other components.

(c) There must be a means to allow the crew to readily determine, during the flight, the quantity of oxygen available in each source of supply.

(d) Oxygen bottles must be installed so as not to be hazardous in crash landings.

522.1449 Means for Determining Use of Oxygen

There must be a means to allow the crew to determine whether oxygen is being delivered to the dispensing equipment.

**SUBCHAPTER G
OPERATING LIMITATIONS AND
INFORMATION**

522.1501 General

(a) Each operating limitation specified in 522.1505 through 522.1525 and other limitations and information necessary for safe operation must be established.

(b) The operating limitations and other information necessary for safe operations must be made available to the pilot as prescribed in 522.1541 through 522.1585.

(Change 522-1 (87-08-31))

522.1505 Airspeed Limitations

(a) All flight speeds must be stated in terms of airspeed indicator readings (IAS).

(b) The never exceed speed, V_{NE} must not exceed 0.90 times the maximum speed demonstrated in flight tests (V_{DF}).

(c) V_{DF} must not exceed the design maximum speed, V_D and must not be less than 0.9 times the design maximum speed according to 522.335(f).

(Change 522-1 (87-08-31))

522.1507 Manoeuvring Speed

The manoeuvring speed must not exceed the design manoeuvring speed, V_A as defined in 522.335(a).

522.1511 Wing-flap Operating Speed

For each positive wing-flap position, the maximum wing-flap operating speed V_{FE} must not be greater than 0.95 times the speed V_F as defined in 522.335(b) for which the structure has been designed.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

**522.1513 Powerplant Extension and Retraction
Speed**

The flight speed range for extension and retraction of the powerplant must be established, together with any limitations associated with it.

(Change 522-1 (87-08-31))

(Change 522-2 ((3-06-30))

522.1514 *Powerplant Extended Maximum Permitted Speed*
(amended 2007/07/16)

The powerplant extended maximum speed V_{PE} must be established as required by 522.1149(b) for powered gliders capable of extending and retracting the powerplant.
(amended 2007/07/16)

522.1515 *Landing Gear Operating Speed*

The maximum landing gear operating speed V_{LO} , if lower than the never exceed speed V_{NE} , must be established for retractable landing gear. It may, however, not be lower than V_T or V_W , whichever is greater.

522.1517 *Rough airspeed*

The rough airspeed, V_{RA} may not exceed the design gust speed in free flight V_B as defined in 522.335(c).

522.1518 *Aerotow and Winch-launching Speeds*

(a) The maximum aerotow speed may not exceed the design speed V_T established in accordance with 522.335(d) and may not exceed the speed demonstrated in flight tests.

(b) The maximum winch-launch speed may not exceed the design speed V_W established in accordance with 522.335(e) and may not exceed the speed demonstrated in flight tests.

522.1519 *Weight and c.g.*

(a) The maximum weight determined under 522.25(a) must be established as an operating limitation.

(b) The weight of non-lifting structural parts must be established.

(c) The c.g. limitations determined under 522.23 must be established as operating limitations.

(d) The empty weight and the corresponding c.g. positions must be determined in accordance with 522.29.

522.1521 *Powerplant Limitations*

(a) *General.* The powerplant limitations prescribed in this paragraph must be established so that they do not exceed the corresponding limits for which the engine or propeller is type certificated.

(b) *Take-off and continuous operation.* The take-off and continuous operation must be limited by:

- (1) the maximum rotational speeds- (r.p.m.);
- (2) the time limit for the use of take-off power;
- (3) the maximum allowable cylinder head, oil, and liquid coolant temperatures, as appropriate; and

(4) the maximum allowable manifold pressure or any other parameter limiting the engine power if the engine is equipped with a continuously variable pitch propeller.
(amended 2003/01/15)

(Change 522-1 (87-08-31))

522.1523 Solo Flight Operation

(amended 2000/11/25)

The pilot's seat for solo flight must be designated so that it is appropriate for safe operation, considering the accessibility of the controls that must be used by the solo pilot during all normal and emergency operations, when the pilot is seated at the designated seat station.
(amended 2000/11/25)

522.1525 Kinds of Operation

The kinds of operation to which the glider is limited are established by the category in which it is eligible for certification and by the installed equipment.

522.1529 Maintenance manual

A maintenance manual containing the information that the applicant considers essential for proper maintenance must be provided. The applicant must consider at least the following in developing the essential information:

- (a) description of systems;
- (b) lubrication instructions setting forth the frequency and the lubricants and fluids which are to be used in the various systems;
- (c) pressures and electrical loads applicable to the various systems;
- (d) tolerances and adjustments necessary for proper functioning of the glider;
- (e) methods of levelling, raising and ground towing;
- (f) methods of balancing control surfaces, and maximum permissible values of play at hinge pins and control circuit backlash;
- (g) allowed rigging tension in the cables of cable-operated control systems as established according to 522.411(b).
- (h) identification of primary and secondary structures;
- (i) frequency and extent of inspections necessary for proper maintenance of the glider;
- (j) special repair methods applicable to the glider;
- (k) special inspection techniques;
- (l) list of special tools;
- (m) rigging data necessary for the proper operation of the glider;
- (n) a separate section titled "Airworthiness Limitations", segregated and clearly distinguishable from the rest of the document, containing statement of service life limitations, replacement or mandatory overhaul of parts, components and accessories subject to such limitations and structural inspection intervals. Those limitations which are given in documents

referred to in (o) must be referenced;
(amended 2007/07/16)

(o) list of maintenance documents for parts, components and accessories approved independently of the glider;

(p) the materials necessary for small repairs;

(q) care and cleaning recommendations;

(r) instructions for rigging and de-rigging;

(s) information on supporting points for ground transport;

(t) of placards and markings and their locations.

(Change 522-1 (87-08-31))

Markings and Placards

522.1541 General

(a) the glider must contain

(1) the markings and placards specified in 522.1545 through 522.1567; and

(2) any additional information, instrument markings, and placards required for the safe operation if it has unusual design, operating, or handling characteristics.

(b) Each marking and placard prescribed in subparagraph (a) of this paragraph -

(1) must be displayed in a conspicuous place; and

(2) may not be easily erased, disfigured, or obscured.

(c) The units of measurement used to indicate air speed on placards must be the same as those used on the indicator.

522.1543 Instrument Markings - General

For each instrument:

(a) when markings are on the cover glass of the instrument, there must be means to maintain the correct alignment of the glass cover with the face of the dial; and

(b) each arc and line must be wide enough and located to be clearly visible to the pilot and not mask any portion of the dial.

522.1545 Airspeed Indicator

Each airspeed indicator must show the following markings:

(a) for V_{NE} a radial red line. If V_{NE} varies with altitude, there must be a means to indicate to the pilot the appropriate limitations throughout the operating altitude range;
(amended 2000/11/25)

(b) for the upper caution range a yellow arc extending from V_{NE} to the allowable rough-air speed V_{RA} ;

(c) for the normal operating range, a green arc with the lower limit at $1.1 V_{S1}$ with maximum weight and for wing-flaps neutral and landing gear retracted and the upper limit at the rough-air speed V_{RA} ;

(d) for the wing-flap operating range, a white arc with the lower limit at the stall speed $1.1 V_{S0}$ for maximum weight and the upper limit at the allowable wing-flaps extended speed V_{FE} ;

(e) a yellow marking (triangle) for the lowest approach speed (at maximum weight without water ballast) recommended by the manufacturer;

(f) for the best rate-of-climb speed V_Y a blue radial line (for powered gliders only).

(Change 522-3 (94-04-30))

522.1547 Magnetic Direction Indicator

Unless the deviation is less than 5° on all headings, the deviation values for magnetic headings in not more than 30° increments must be placarded near the magnetic direction indicator.

522.1548 Accelerometer

Each accelerometer required by 522.1303(c) must show red radial lines for the maximum positive and negative limit manoeuvring load factors.

522.1549 Powerplant Instruments

For each required powerplant instrument, as appropriate to the type of instruments:

(a) each maximum and, if applicable, minimum safe operating limit must be marked with a red radial line;

(b) each normal operating range must be marked with a green arc, not extending beyond the maximum and minimum safe limits;

(c) each take-off and precautionary range must be marked with a yellow arc.

(d) In the case of digital solid state displays, limitations, precautionary and operating ranges required by sub-paragraphs (a), (b) and (c) of this paragraph must be clearly indicated. The display must be readable under all lighting conditions likely to be met in service.]

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.1553 Fuel Quantity Indicator

Each fuel quantity indicator must be calibrated to read "zero" during level flight when the quantity of fuel remaining in the tank is equal to the unusable quantity determined in accordance with 522.959.

(Change 522-1 (87-08-31))

522.1555 Control Markings

(a) Each cockpit control, other than primary flight controls, must be clearly marked as to its function and method of operation.

(b) The colour markings of cockpit controls must be in accordance with those specified in 522.780.

(c) For powerplant fuel controls:

(1) Each fuel tank selector control must be marked to indicate the position corresponding to each tank.

(2) If safe operation requires the use of any tanks in a specific sequence, that sequence must be marked on or near the selector for those tanks.

(Change 522-1 (87-08-31))

522.1557 *Miscellaneous Marking and Placards*

(a) *Baggage compartment.* Each baggage compartment must have a placard stating the loading limitations.

(b) *Fuel and oil filler openings.* The following apply:

(1) Fuel filler openings must be marked at or near the filler cover with the minimum fuel grade.

(2) Oil filler openings must be marked at or near the filler cover, indicating:
(amended 2002/05/22)

(i) the grade of oil; and
(amended 2002/05/22)

(ii) whether the oil is detergent or non-detergent.
(amended 2002/05/22)

(3) If placards and markings at the fuel or oil opening include tank capacity, the capacity must be specified in litres. Imperial or U.S. gallons may also be included.
(amended 2002/05/22)

(c) *Fuel tanks.* The usable fuel capacity of each tank must be marked either at the selector or on the gauge (when provided) or on the tank if this is translucent and visible to the pilot in flight.

(d) *In-flight engine starting.* A placard must be provided stating any limitations to be observed during in-flight engine starting.

(e) *Tire pressure.* In the case of gliders fitted with a landing wheel or wheels, the tire pressure must be marked on or in the glider.

(f) *Aerobatic manoeuvres.* A list of permissible aerobatic manoeuvres, including spins, must be placarded in each glider, so that it is plainly visible to the pilot.

(g) *Removable ballast.* If removable ballast is used, the place for carrying ballast must have a placard stating instructions for the proper placement of the removable ballast under each loading condition for which each removable ballast is necessary.
(amended 2007/07/16)

(h) *Weight and cockpit load.* The following additional data must be placarded in each glider so that they are plainly visible to the pilot:
(amended 2007/07/16)

(1) maximum weight;
(amended 2007/07/16)

(2) maximum and minimum cockpit weight.
(amended 2007/07/16)

(Change 522-1 (87-08-31))

522.1559 (Deleted)
(amended 2003/01/15)

(Change 522-1 (87-08-31))
(Change 522-2 (93-06-30))

522.1561 Safety Equipment

Each attachment point for an occupant's parachute static line must be marked red.

522.1563 Airspeed Placards (amended 2003/01/15)

The following speeds, if they are not marked on the airspeed indicator, must be placarded in each glider or powered glider so that they are plainly visible to the pilot:
(amended 2003/01/15)

(a) the maximum winch-launching speed, V_W (when winch-launching is allowed);
(amended 2003/01/15)

(b) the maximum aerotow speed, V_T (when aerotow is allowed);
(amended 2003/01/15)

(c) the manoeuvring speed;
(amended 2003/01/15)

(d) the maximum landing gear operating speed, V_{LO} , where applicable;
(amended 2003/01/15)

(e) the powerplant extension and retraction speeds $V_{PO \text{ min}}$ and $V_{PO \text{ max}}$, where applicable.
(amended 2003/01/15)

Flight Manual

522.1581 General

(a) *Furnishing information.* A flight manual must be furnished with each glider. There must be an appropriate location for stowage of the flight manual aboard the glider and each flight manual must contain the following:

(1) Information required in 522.1583 through 522.1589 including the explanations necessary for their proper use and the significance of the symbols used.

(2) Other information that is necessary for safe operation because of design, operating or handling characteristics.

(3) A list of effective pages, with the identification of those containing approved information according to sub-paragraph (b).

(b) *Approved information.* Each part of the flight manual containing information prescribed in 522.1583 through 522.1587(a) must be limited to such information and must be approved, identified and clearly distinguished from each other part of the flight manual. All manual material must be of a type that is not easily erased, disfigured or misplaced and it must be in the form of individual sheets capable of being inserted in a manual provided by the applicant, or in a folder, or in any other permanent form.

(c) *Units.* The units of measurement used in the flight manual must be the same as those used on the indicators.

(amended 2001/05/23)

(Change 522-2 (93-06-30))

(Change 522-3 (94-04-30))

522.1583 *Operating Limitations*

(a) *Airspeed limitations.* The following information must be furnished:

(1) Information necessary for the marking of the airspeed limits on the indicator as required in 522.1545, and the significance of the colour coding used on the indicator.

(2) The speeds V_A , V_{LO} , V_T , V_W and, where appropriate, V_{PO} min, V_{PO} max and V_{PE} and their significance.

(amended 2007/07/16)

(b) *Weights.* The following information must be furnished:

(1) the maximum weight and the maximum weight of non-lifting parts. If the glider is equipped for expendable water-ballast, the maximum weight with and without water-ballast must be furnished.

(2) Any other weight limit, if necessary.

(c) *Centre of gravity.* The established c.g. limits required by 522.23 must be furnished.

(d) *Manoeuvres.* Authorized manoeuvres established in accordance with 522.3(a) or 522.3(b), as appropriate, together with permissible ranges of wing-flap position must be stipulated.

(amended 2007/07/16)

(e) *Flight load factors.* Manoeuvring load factors; the following must be furnished:

(1) The factors corresponding to point A and point G of Figure 1 of 522.333(b), stated to be applicable at V_A

(2) The factors corresponding to point D and point E of Figure 1, of 522.333(b), stated to be applicable at V_{NE} .

(3) The factor with airbrakes extended as specified in 522.345.

(4) The factor with wing-flaps extended as specified in 522.345.

(5) Markings in accordance with 522.1548.

(f) *Kinds of operation.* The kinds of operation (such as VFR , cloud-flying, day-or-night operation) in which the glider may be used, must be stated. The minimum equipment required

for the respective kind of operation must be listed.
(amended 2007/07/16)

(g) *Aerotow, auto-tow and winch-launching.* The following information on aerotowing, auto-towing and winch-launching must be stated:

- (1) the maximum permissible nominal strength for the towing cable or weak link;
- (2) the minimum towing cable length established in accordance with 522.151(d);
- (3) Only textile ropes must be used for aerotowing.

(amended 2007/07/16)

(h) *Powerplant limitations.* The following information must be furnished:

- (1) Limitations required by 522.1521.
- (2) Information necessary for marking the instruments required by 522.1549 through 522.1553.

(i) *Placards.* Placards required by 522.1555 through 522.1559 must be presented.

(j) In the case of the two seat glider the single pilot seat location and the limitations for solo flight must be furnished as determined under 522.1523.

(amended 2000/11/25)

(k) Any limitation associated with the carriage of water ballast necessary for safe operation must be furnished.

(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.1585 Operating Data and Procedures

Information concerning normal and emergency procedures and other pertinent information necessary for safe operation must be furnished, including:

(a) The stall speed in the various configurations;

(b) Any loss of altitude of more than 30 m or any pitch attitude more than 30° below the horizon occurring during the recovery part of the manoeuvre prescribed in 522.201;

(c) Any loss of altitude of more than 30 m occurring in the recovery part of the manoeuvre prescribed in 522.203;

(d) Spinning characteristics, including loss of altitude, any tendency for the spin to turn into a spiral dive, and recommended recovery procedure.

(e) Recommended operational speeds and entry speeds for each authorized manoeuvre.

(f) Slip characteristics in landing configuration, with airbrakes extended.

(amended 2003/01/15)

(g) Any special procedures or advice to the pilot that may be necessary for aerotowing, wire or bungee launching.

(amended 2007/07/16)

(h) The take-off distances in the conditions of 522.51, unless classified as a Self-Sustaining Powered Glider, in which case there must be a statement in the limitations section of the Flight Manual that the glider is not approved for take-off by sole means of its own power. In addition, the statement must make clear which configurations are approved for launching.

(i) Special procedures to start the engine in flight, if necessary. The maximum demonstrated engine start density altitude, after a prolonged in-flight shutdown, and the normal height loss to be expected during extension/unfeathering restart, and the achievement of minimum climb power, must be stated.
(amended 2003/01/15)

(j) For self-sustaining powered gliders, the maximum altitude that can be sustained.
(amended 2003/01/15)

(k) Information on the total quantity of usable fuel.
(amended 2003/01/15)

(l) Special pre-flight procedures to ensure safe operation of engine and accessories, if necessary.
(amended 2007/07/16)

(m) Advice to the pilot for correct adjustment and positioning of an adjustable headrest, if installed.
(amended 2003/01/15)

(n) Information on the use of water ballast.
(amended 2007/07/16)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.1587 Performance Information

The following information must be furnished:

(a) Airspeed system calibration.

(b) The demonstrated crosswind velocity.

(c) The take-off performance versus density altitude and the influence of other than smooth and hard surfaces.

(amended 2003/01/15)

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

522.1589 Loading Information

The following loading information must be furnished:

(a) The empty weight and the position of the empty weight c.g.

(b) Instruction enabling the pilot of the glider to determine the water ballast load versus the useful load.

(Change 522-1 (87-08-31))

(Change 522-2 (93-06-30))

SUBCHAPTER H ENGINES GENERAL

522.1801 *Applicability*

This Subchapter H is applicable to spark-and-compression-ignition engines for powered gliders.

(amended 2007/07/16)

522.1805 *Instruction Manual*

An instruction manual containing the information that the applicant considers essential for installing, operating, servicing and maintaining the engine must be provided.

522.1807 *Engine Ratings and Operating Limitations*

Engine ratings and operating limitations to be established are based on the operating conditions demonstrated during the bench tests prescribed in this Subchapter H. They include power ratings and operational limitations relating to speeds, temperatures, pressures, fuels and oils which the applicant finds necessary for the safe operation of the engine.

522.1808 *Selection of Engine Power Ratings*

Each selected rating must be for the lowest power that all engines of the same type may be expected to produce under the conditions to determine that rating.

Design and Construction

522.1815 *Materials*

The suitability and durability of materials used in the engine must -

- (a) Be established on the basis of experience or tests; and
- (b) Conform to approved specifications that ensure their having the strength and other properties assumed in the design data.

522.1817 *Fire Prevention*

(a) The design and construction of the engine and the materials used must minimize the probability of the occurrence and spread of fire because of structural failure, overheating or other causes.

(b) Each external line or fitting that conveys flammable fluids must be at least fire resistant. Components must be shielded or located to safeguard against the ignition of leaking flammable fluid.

522.1819 *Durability*

Engine design and construction must minimize the probability of occurrence of an unsafe condition of the engine between overhauls.

522.1821 *Engine Cooling*

Engine design and construction must provide the necessary cooling under conditions in which the powered glider is expected to operate.

522.1823 Engine Mounting Attachments and Structure

(a) The maximum allowable loads for engine mounting attachments and related structure must be specified by the applicant.

(b) The engine mounting attachments and related structure must be able to withstand the specified loads without failure, malfunction or permanent deformation.

522.1825 Accessory Attachment

Each accessory drive and mounting attachment must be designed and constructed so that the engine will operate properly with the accessories attached. The design of the engine must allow the examination, adjustment or removal of each essential engine accessory.

522.1833 Vibration

The engine must be designed and constructed to function throughout its normal operating range of crankshaft rotational speeds and engine powers without inducing excessive stress in any of the engine parts because of vibration and without imparting excessive vibration forces to the structure of the powered glider.

522.1835 Fuel and Induction System

(a) The fuel system of the engine must be designed and constructed to supply the appropriate mixture of fuel to the combustion chambers throughout the complete operating range of the engine under all starting, flight and atmospheric conditions.

(b) The intake passages of the engine through which air, or fuel in combination with air, passes must be designed and constructed to minimize ice accretion and vapour condensation in those passages. The engine must be designed and constructed to permit the use of a means for ice prevention.

(c) The type and degree of fuel filtering necessary for protection of the engine fuel system against foreign particles in the fuel must be specified. The applicant must show (eg within the 50-hour run prescribed in 522.1849(a)) that foreign particles passing through the prescribed filtering means will not critically impair engine fuel system functioning.

(d) Each passage in the induction system that conducts a mixture of fuel and air, and in which fuel may accumulate, must be self-draining to prevent a liquid lock in the combustion chambers. This applies to all attitudes that the applicant establishes as those the engine can have when the powered glider in which it is installed is in the static ground attitude.

522.1839 Lubrication System (Four-stroke Engines Only)

(a) The lubrication system of the engine must be designed and constructed so that it will function properly in all attitudes and atmospheric conditions in which the powered glider is expected to operate. In wet-sump engines this requirement must be met when the engine contains only the minimum oil quantity, the minimum quantity being not more than half the maximum quantity.

(b) The lubrication system of the engine must be designed and constructed to allow installing a means of cooling the lubricant.

(c) The crankcase must be vented to preclude leakage of oil from excessive pressure in the crankcase.

Bench Tests

522.1843 *Vibration Test*

Except where the engine is of a type of construction known not to be prone to hazardous vibration, the engine must undergo a vibration survey to establish crankshaft torsional and bending characteristics over a range of rotational speeds from idling to 110% of the maximum continuous speed or 103% of the maximum desired take-off speed, whichever is the greater. The survey must be conducted with a representative propeller. No hazardous condition may be present.

522.1845 *Calibration Test*

Each engine must be subjected to the calibration tests necessary to establish its power characteristics and the conditions for the endurance test specified in 522.1849(a) to (c). The results of the power characteristics calibration tests form the basis for establishing the characteristics of the engine over its entire operating range of crank shaft rotational speeds, manifold pressures, and fuel/air mixture settings. Power ratings are based on standard atmospheric conditions at sea-level.

522.1847 *Detonation Test (Spark Ignition Only)*

The engine must be tested to establish that it can function without detonation throughout the range of intended conditions of operation.

522.1849 *Endurance Test*

(a) The engine must be subjected to an endurance test (with a representative propeller) that includes a total of 50 hours of operation and consists of the cycles specified in 522.1849(c).

(b) Additional endurance testing at particular rotational speed(s) may be required depending on the results of the tests prescribed in 522.1843, to establish the ability of the engine to operate without fatigue failure.

(c) Each cycle must be conducted as follows:

Sequence	Duration (Minutes)	Operating Conditions
1	5	Starting - idle
2	5	Take-off power
3	5	Cooling run (Idle)
4	5	Take-off power
5	5	Cooling run (Idle)
6	5	Take-off power
7	5	Cooling run (Idle)
8	15	75% of maximum continuous power

Sequence	Duration (Minutes)	Operating Conditions
9	5	Cooling run (Idle)
10	60	Maximum continuous power
11	5	Cooling run and stop
Total	120	

(d) During or following the endurance test the fuel and oil consumption must be determined.

522.1851 Operation Test

The operation test must include the demonstration of backfire characteristics, starting, idling, acceleration, overspeeding and any other operational characteristics of the engine.

522.1853 Engine Component Test

(a) For engine components that cannot be adequately substantiated by endurance testing in accordance with 522.1849(a) to (c), the applicant must conduct additional tests to establish that components are able to function reliably in all normally anticipated flight and atmospheric conditions.

(b) Temperature limits must be established for each component that requires temperature controlling provisions to ensure satisfactory functioning, reliability and durability.

522.1855 Teardown Inspection

After the endurance test has been completed the engine must be completely disassembled. No essential component may show rupture, cracks or excessive wear.

522.1857 Engine Adjustment and Parts Replacement

Service and minor repairs to the engine may be made during the bench tests. If major repairs or replacements of parts is necessary during the tests or after the teardown inspection, or if essential parts have to be replaced, the engine must be subjected to any additional tests the Minister may require.

(amended 2007/07/16)

SUBCHAPTER J PROPELLERS GENERAL

522.1901 Applicability

This Subchapter J is applicable to propellers for powered gliders.

(amended 2007/07/16)

522.1903 Instruction Manual

An instruction manual containing the information that the applicant considers essential for installing, servicing and maintaining the propeller must be provided.

522.1905 Propeller operating Limitations

Propeller operating limitations must be established on the basis of the conditions demonstrated during the tests specified in this Subchapter J.

Design and Construction**522.1917 Materials**

The suitability and durability of materials used in the propeller must -

- (a) Be established on the basis of experience or tests; and
- (b) Conform to approved specifications that ensure their having the strength and other properties assumed in the design data.

522.1919 Durability

Propeller design and construction must minimize the possibility of the occurrence of an unsafe condition of the propeller between overhauls.

522.1923 Pitch Control

(a) Failure of the propeller pitch control must not cause hazardous overspeeding under intended operating conditions.

(amended 2003/01/15)

(b) If the propeller can be feathered, the control system must be designed to minimize:
(amended 2003/01/15)

(1) consequential hazards, such as a propeller runaway resulting from malfunction or failure of the control system, and

(amended 2003/01/15)

(2) the possibility of an unintentional operation.

(amended 2003/01/15)

Tests and Inspections**522.1933 General**

The applicant must show that the propeller and its main accessories complete the tests and inspections prescribed in 522.1935 through 522.1947 without evidence of failure or malfunction.

522.1935 Blade Retention Test

The hub and blade retention arrangement of propellers with detachable blades must be subjected to a load equal to twice the centrifugal force occurring at the maximum rotational speed (other than transient overspeed) for which approval is sought, or the maximum governed rotational speed, as appropriate. This may be done either by a whirl test or a static pull test.

522.1937 Vibration Load Limit Test

The vibration load limits of each metal hub and blade, and of each primary load-carrying metal component of non-metallic blades, must be determined for all reasonably foreseeable vibration load patterns.

522.1939 Endurance Test

(a) *Fixed pitch or ground-adjustable wood or metal propellers.* Fixed-pitch or ground-adjustable wood or metal propellers must be subjected to one of the following tests:

- (1) A 50-hour flight test in level flight or in climb. At least five hours of this flight test must be with the propeller at the rated rotational speed and the remainder of the 50 hours must be with the propeller operated at not less than 90% of the rated rotational speed. This test must be conducted on a propeller of the greatest diameter for which certification is requested.
- (2) A 50-hour endurance bench test on an engine at the power and propeller rotational speed for which certification is sought. This test must be conducted on a propeller of the greatest diameter for which certification is requested.

(b) *Variable pitch propellers.* Wood or metal variable pitch propellers (propellers the pitch of which can be changed by the pilot or by automatic means while the propeller is rotating) must be subjected to one of the following tests:

- (1) A 50-hour test on an engine with the same power and rotational speed characteristics as the engine or engines with which the propeller is to be used. Each test must be made at the maximum continuous rotational speed and power rating of the propeller. If a take-off performance greater than the maximum continuous rating is to be established, an additional 10-hour bench test must be made at the maximum power and rotational speed for the take-off rating.
- (2) Operation of the propeller throughout the engine endurance tests prescribed in Subchapter H.

522.1941 Functional Tests

(a) Each variable pitch propeller must be subjected to all applicable functional tests of this paragraph. The same propeller used in the endurance test must be used in the functional test and must be driven by an engine on a test stand or on a powered glider.

(b) *Manually controllable propellers.* 500 complete cycles of control throughout the pitch and rotational speed ranges, excluding the feathering range.

(c) *Automatically controllable propellers.* 1500 complete cycles of control throughout the pitch and rotational speed ranges, excluding the feathering range.

522.1945 Teardown Inspection













After the endurance test has been completed the propeller must be completely disassembled. No essential component may show rupture, cracks or excessive wear.

522.1947 Propeller Adjustments and Parts Replacement

The applicant may service and make minor repairs to the propeller during the tests. If major repairs or replacement of parts is found necessary during the tests or in the teardown inspection, any additional tests that the Minister finds necessary must be conducted.

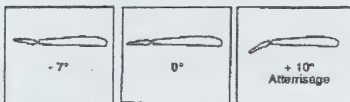
(amended 2012/03/27)

APPENDIX F
GLOSSARY OF AEROBATIC MANOEUVRES
 (amended 2007/07/16)

Manoeuvre	Term	Manoeuvre	Term
	Spin		Half Loop and Half Roll
	Loop		Half Roll and Half Loop
	Stall Turn		Slow Roll
	Chandelle (climbing)		Flick Roll
	Chandelle (dive out)		Barrel Roll
	Lazy Eight		Tail Slide
* This manoeuvre is often called "Immelmann Turn". That term however, originally referred to a manoeuvre very similar to the stall turn			

APPENDIX G **COCKPIT PLACARDS** (amended 2007/07/16)

1. FLAPS



2. AIR BRAKES



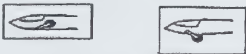
3. BRAKE CHUTE



4. WHEEL BRAKES



5. LANDING GEAR



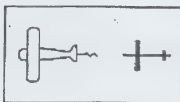
6. TRIMMER



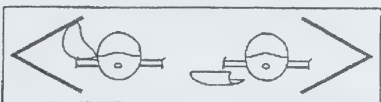
7. WATER BALLAST JETTISON



8. RELEASE



9. CANOPY



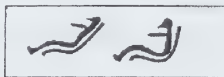
Type 3

Side hinge. Control operated in opposite directions to release and to jettison, as shown by arrows.



Type 4
Rear hinge

10. SEAT BACK

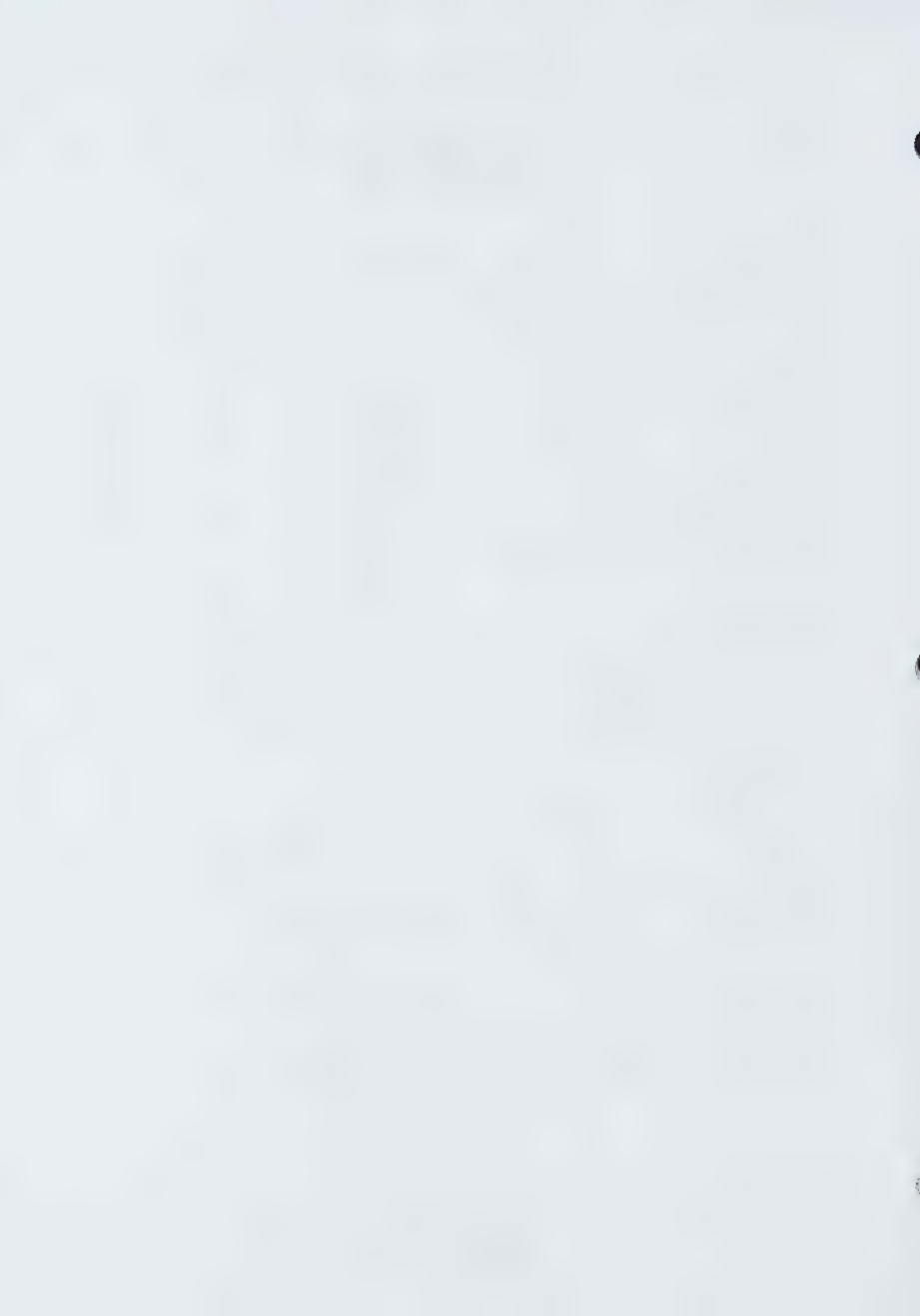


11. PEDAL ADJUSTMENT



12. AIR VENT





APPENDIX I

SELF-SUSTAINING POWERED GLIDERS

(amended 2007/07/16)

1. Engine conditions & speeds

Two Conditions must be considered -

- (a) Engine extended and stopped (for cases related to engine idling).
- (b) Engine running at maximum power (for cases related to maximum continuous power, or all allowable power settings and also to 522.175(d)(5)).

2. Structure

522.361(a)(1) is not applicable.

3. Equipment

522.1305 Power-plant instruments.

(a) A tachometer or a suitable substitute -

(1) A simple indication (e.g. a green light) that the engine is producing the power upon which the performance information is based; and

(2) A simple indication (e.g. a red light) that the limiting engine r.p.m. has been reached except where it has been shown that the maximum engine r.p.m. cannot be exceeded at all speeds up to V_{NE} .

(b) A fuel quantity indicator for each fuel tank. The installation of a simple device, e.g. a transparent tank, a sight gauge or a floating type of indicator is acceptable.

(c) An oil temperature indicator or an oil temperature warning device (red light). (Except for two-stroke engines).

(d) An oil pressure indicator or warning device (red light). (Except for two-stroke engines).

(e) A cylinder head temperature indicator or warning device (red light) for each air-cooled engine when cowl flaps are fitted.

(f) An elapsed-engine-time indicator is not required.

(g) An oil quantity indicator, e.g. dipstick, unless the engine is a two-stroke type operating on pre-mixed fuel and oil.



APPENDIX J

PROCESS OF H-POINT DETERMINATION

(amended 2007/07/16)

For the H-point determination, the thigh contact area and the seat level are the two reference areas in a cockpit.

(a) Levelling the glider

The glider should be adjusted with the longitudinal axis horizontal and the wings level

(b) Placing and adjusting of the device

With the thighs below the transitional area of seat level and thigh contact area, the device is placed in the centre of the thigh contact area. The device is then slowly pushed down to the thigh contact area until the two lower ends of the thighs touch the seat pan at the same time. This process should ensure that the thighs fully touch the thigh contact area at all times.

When both of the thighs have optimum contact with the thigh contact area or seat level, the device should be adjusted with the use of a spirit level until horizontal at the contact point and fixed in that position.

(c) Marking of H-point and determination of optimum location of lap belt anchorage points

When the device is adjusted, the H-point device axis is pushed to one side until a felt-tip pen that is attached to the device touches the side wall of the seat pan. The H-point should be marked at this position. The same procedures should be repeated for the other side.

Continued adjustment of the device should enable the marking of the H-point for each adjusted position.

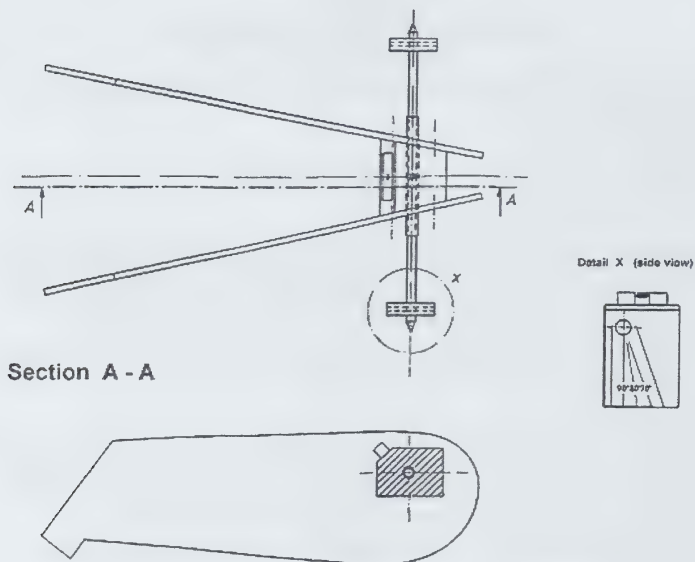
A rectangle should be drawn around all H-points marked on the side wall of the seat pan, which should be as small as possible. The intersecting point of the rectangle's diagonal shows the "determined H-point".

For the determination of optimum area for the anchorage point of the lap belts, the device is placed on the seat pan in such a way that the H-point of the device corresponds with the "determined H-point" of the seat pan.

The stencil should then be adjusted with the spirit level attached to it allowing the H-point axis to be fixed with the locking device in the connecting part. The area required for the anchorage point of the lap belt can then be identified on the stencil.

H-Point device

The device is basically composed of the two thighs, the connecting part, and the H-Point axis (see figure 1).

**Figure 1**

The original constructional drawing of the H-Point device can be ordered by

TÜV Rheinland Kraftfahrt GmbH
Institut für Verkehrssicherheit
Abteilung Luftfahrttechnik
Am Grauen Stein
D-51105 Köln

APPENDIX K

AEROTOWING OF GLIDERS BY POWERED GLIDERS

(amended 2007/07/16)

Applicability:

For powered gliders used for aerotowing gliders and for the powered glider - glider aerotowing combination itself (hereafter the combination is referred to as the "aerotow"), the following additional requirements apply:

Notes:

In the following the term "glider" is used for aerotowed gliders as well as for aerotowed powered gliders.

Aerotowing of more than one glider at a time needs further consideration and is not covered by this Appendix.

1. Subchapter B - Flight

1.1 (See Advisory Circular (AC) 522.001, Appendix K paragraph 1.1)

1.2 522.51 is applicable to the aerotow, except that 522.51 (b)(2) is not applicable.

Compliance must be shown at 500 m above sea level.

1.3 522.65 is applicable to the aerotow.

Compliance must be shown at 500 m above sea level.

1.4 A new paragraph 522.77 is added:

522.77 Aerotowing Speeds

The minimum aerotowing speed and the best-rate-of-climb aerotowing speed must be determined by flight test.

The minimum aerotowing speed must not be less than $1.3 V_{S1}$ of either the powered glider or the aerotowed glider, whichever is the higher.

1.5 522.143, except the sideslip condition under subparagraph (a), is to be applied also to the aerotow.

1.6 522.151 (c) and (d) are applicable to the aerotow.

1.7 522.207 (b) is amended to read:

(b) An audible artificial stall warning giving a clear and distinctive indication must be provided for the powered glider unless the stall warning is sufficiently clear and distinctive for the pilot, even under the additional work load when aerotowing.

1.8 522.207 (d) does not apply to the aerotowing powered glider.

1.9 522.233 (c) Powered gliders used for aerotowing gliders must be able to taxi and take-off without additional ground assistance.

2. Subchapter C - Structure

2.1 522.307 applies to the aerotow.

2.2 522.581 is amended to read:

(a) It must be assumed that the aerotow initially is in stabilised level flight and that an aerotowing cable load of 50 daN (in the absence of a more rational analysis) acts at the aerotowing hook in the following directions:

- (1) rearwards in the direction of the fuselage longitudinal axis;
- (2) in the plane of symmetry rearwards and downwards at an angle of 20° to the fuselage longitudinal axis;
- (3) in the plane of symmetry rearwards and upwards at an angle of 40° to the fuselage longitudinal axis; and
- (4) rearwards and sideways at an angle of 30° to the fuselage longitudinal axis.

(b) It must be assumed that the aerotow is initially subjected to the same conditions as specified in 522.581 (a) and the cable load due to surging suddenly increases to $1.0 Q_{nom}$.

Note: It is assumed that only textile aerotowing cables are used.

(1) The resulting cable load increment must be balanced by linear and rotational inertia forces. These additional loads must be superimposed on those arising from the conditions of 522.581(a).

(2) Q_{nom} is the rated ultimate strength of the weak links to be used for the aerotowed gliders and shown to be suitable in operation.

2.3 522.585 is amended to read:

522.585 Strength of the Aerotowing Hook Attachment

The aerotowing hook attachment must be designed to carry a limit load of $1.5 Q_{nom}$ as defined in 522.581 (b) acting in the directions specified in 522.581.

3. Subchapter D - Design and Construction

3.1 522.689 applies also for the aerotow release system of the powered glider.

3.2 522.711 applies also for the aerotowing powered glider and is amended by adding paragraphs (h) and (i):

(h) Release mechanisms for aerotowing gliders must be installed so that there is no interference between the aerotow rope and any control surface throughout their full angular movement, with the aerotowed glider in any position as defined in 522.581(a).

(i) The release mechanism of the aerotowing powered glider must be suitably protected against general degradation caused by mud and dirt, etc..

(j) It must be possible for the pilot to visually check the aerotow cable situation.

3.3 522.713 (c) is applicable to the release mechanism of the aerotowing powered glider.

3.4 522.780 is amended by adding the following requirement:

Aerotowing cable release and throttle must be located and arranged to be capable of operation by the same hand.

3.5 A Note is added:

The requirements in Appendix K do not constitute all the requirements necessary to cover the installation of cable retracting devices. Compliance with further requirements may become necessary.

4. Subchapter E - Powerplant Installation

4.1 A new paragraph 522.991 is added:

522.991 Fuel Pumps

(a) If for the purpose of 522.951 a fuel pump is required for proper engine operation, an emergency pump must be provided to immediately supply fuel if the main pump fails. The power supply for the emergency pump must be independent of the power supply for the main pump.

(b) If both the normal pump and the emergency pump operate continuously, a means or a procedure must be provided to indicate failure of either pump.

(c) The operation of any fuel pump may not affect the engine operation so as to create a hazard regardless of the engine power setting or the functioning of the other fuel pump.

4.2 522.1047 must be applied to the aerotow.

5. Subchapter F - Equipment

5.1 522.1305 (e) is amended to read:

(e) a cylinder head temperature indicator or an indicator for the critical temperature determined in the cooling test.

5.2 522.1307 is amended by adding the following sentence:

— An easily removable rear-view mirror of sufficient strength and rigidity must be attached and so located that the pilot, when seated with the seat belts fastened, has full and unobstructed view of the aerotowed glider in any position as defined in 522.581 (a). It must be possible to permanently observe the aerotowed glider without other pilot's tasks being affected and without major turning movements of the head.

— An Aerotow rope as specified by the applicant.

6. Subchapter G - Operating Limitations and Information

Note: This information should normally be furnished under Section 9 of the Flight Manual.

6.1 522.1529 applies to powered gliders equipped for aerotowing.

6.2 522.1583 is amended by adding the following paragraph (k):

(k) Aerotowing of gliders

The following information concerning aerotowing of gliders must be furnished:

- (1) Maximum weight of the powered glider (if different from the value under (b) (1))

(2) Maximum weight of the aerotowed gliders

(3) Maximum weight of the combination powered glider and glider

(4) The minimum value for the maximum allowable aerotow speed of the aerotowed glider (V_T)

(5) Information that the powered glider must lift off only after lift-off of the aerotowed glider

(6) Rated ultimate strength for the weak link to be used for the aerotowing cable.

(7) The specification of the aerotow rope (length, material, weak link)

6.3 As far as applicable for the intended purpose, 522.1585 must be applied to the aerotow. In addition, the minimum aerotowing speed and the best-rate-of-climb speed for the aerotow must be furnished. Furthermore, glider types whose relevant characteristics are comparable to those of the types used in the flight tests must be furnished as examples.

6.4 522.1587 (c) must be applied to the aerotow and is amended by the following requirements:

In addition, information about the degradation of performance in take-off distance due to long grass, rain drops or contamination of the wing (leading edge), as specified by the applicant, must be furnished.

